FINAL WORK PLAN

with

QUALITY ASSURANCE PROJECT PLAN

for

GROUNDWATER SAMPLING
at
Former Jerome County Landfill/
Proposed Jerome Butte Industrial Park

Jerome, Idaho

Prepared by

US ARMY CORPS OF ENGINEERS
Seattle District

Prepared for
US EPA Region 10

FINAL

February 7, 2017

Revision 1: May 2, 2017

REVISIONS

Revision #1: After EPA had reviewed and signed the QAPP, DEQ also requested to review the QAPP. The following changes have been made using tracked changes:

- Typo fixed in Table 5.
- Typo fixed in Section 2.2.2.
- Completeness goal added to Section 1.4.
- Appendix D – Table 1 updated to include state MCL for EDB.
- Appendix D – Table 3 updated to clarify uranium has no state MCL.

Approval Sheet [Original signatures obtained 2/7/17 and 2/8/17)

This Work Plan with Quality Assurance Project Plan was prepared by the Seattle District, U.S. Army Corps of Engineers (USACE), on behalf of Joanne LaBaw of the U.S. Environmental Protection Agency (EPA) in support of a Targeted Brownfields Assessment (TBA) in Jerome, Idaho.

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Joanne LaBaw, Region 10 EPA TBA Coordinator Date

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Donald Brown, Region 10 EPA Quality Assurance Manager Date

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Veronica Henzi, USACE Project Manager Date

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Jacob Williams, USACE Chemist Date

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SUMMARY - JEROME BUTTE WORK PLAN with QUALITY ASSURANCE PROJECT PLAN

This document is the Jerome Butte Work Plan with Quality Assurance Project Plan (WP-QAPP) for a groundwater sampling event in the Jerome Butte area of Jerome, Idaho. This work is in support of an EPA Targeted Brownfields Assessment (TBA) that the City of Jerome (City) requested from EPA to help understand what contaminants may be present in groundwater due to an old landfill. The City is interested in creating an industrial park with a new municipal well, but it is concerned that the groundwater might be contaminated. The groundwater sampling event, planned for the spring of 2017, will test for the presence or absence of a suite of contaminants.

This WP-QAPP describes how the groundwater sampling project will be executed and focuses on the quality assurance aspects of data collection. The scope of work (SOW) is as follows:

- Sample groundwater wells and obtain water level measurements (where feasible for the latter) in Jerome, ID where access agreements have been obtained (anticipate a maximum of 10 private wells).
- Sample wells for the following analytes:
  - Synthetic organic compounds (SOCs) and radionuclides using Anatek Laboratory in Moscow, ID
  - Metals, nitrates, and nitrites using Manchester Environmental Laboratory
  - Volatile organic compounds (VOCs) using a contract laboratory program (CLP) lab
  - Fecal coliform using Magic Valley Laboratory in Twin Falls, ID
- Prepare a report of findings

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TABLES

ACRONYMS

CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CoC	chain-of-custody
COR	Contracting Officer's Representative
EDD	electronic data deliverable
EPA	United States Environmental Protection Agency
GPS	global positioning system
HAZWOPER	Hazardous waste operations and emergency response
IDEQ	Idaho Department of Environmental Quality
LCS	laboratory control sample
LOQ	limit of quantitation
MCL	maximum contaminant level
MDL	method detection limit
MEL	(EPA's) Manchester Environmental Laboratory
MS/MSD	matrix spike/matrix spike duplicate
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PQO	project quality objective
QA	quality assurance
QC	quality control
RSCC	Regional Sample Control Center
SMO	Sample Management Office
SOC	synthetic organic compound
SVOC	semi-volatile organic compound
TBA	Targeted Brownfields Assessment
TSA	technical system audit
UFP	Uniform Federal Policy
USACE	United States Army Corps of Engineers
VOA	volatile organic analysis
VOC	volatile organic compound
WP-QAPP	Work Plan with Quality Assurance Project Plan

1. PROJECT MANAGEMENT, PLANNING, OBJECTIVES

The City of Jerome, Idaho, contacted the U.S. Environmental Protection Agency (EPA) Brownfields program and requested a Targeted Brownfields Assessment (TBA) to assess possible groundwater contamination that might exist due to an old county landfill and agricultural activities. The City would like to build an industrial park and install a new municipal water well near the old landfill. In response, EPA initiated a TBA to support development of the proposed industrial park site, referred to here as the "Jerome Butte" site. EPA has agreed to test for a suite of possible contaminants in available agricultural and domestic wells near the location of the planned new municipal well to identify whether contaminants are present. If they are, the concentrations will be compared to the State of Idaho drinking water maximum contaminant levels (MCLs).

EPA has requested that the Seattle District, U.S. Army Corps of Engineers (USACE), collect water level data (if feasible) and groundwater samples from up to 10 existing private wells surrounding the former landfill. The number and types of wells to be sampled for a suite of contaminants are contingent on obtaining signed access agreements. The wells are a mix of agricultural and drinking water wells (both types will be sampled).

This Jerome Butte Work Plan with Quality Assurance Project Plan (WP-QAPP) describes the planned groundwater sampling and analysis event and water level measurement activities at the Jerome Butte site. USACE is completing this work under a Brownfields Interagency Agreement with EPA Region 10 for technical assistance. The tentative 2016/2017 project schedule is summarized in Table 1 below. The schedule and associated tasks may be updated based on project-related or EPA-directed changes.

Table 1. Project Schedule for 2016/2017

Deliverable	Due	Comments
Planning and Update Meetings	As needed.	
WP-QAPP		
Draft WP-QAPP submitted	December 2016	MS Word (PDF as needed)
Final WP-QAPP submitted	Prior to first sampling event in Spring 2017	MS Word (PDF as needed)
Groundwater Sampling		
Groundwater Sampling Event 1 (See analytical tables for more details)	Spring 2017	
Static water level measurements (if feasible)/GPS coordinates at wells sampled.	Spring 2017	
USACE/EPA review of analytical data. USACE/EPA to perform data validation.	Spring 2017, as data becomes available	
Report for Sampling Event		
Draft Field Report - includes field reports, sample shipment records, analytical results and QA/QC reports. Groundwater direction will be described, and recommendations made, if applicable.	30 days after receipt of laboratory results.	Electronic MS Word
Final Field Report	After receipt and incorporation of EPA comments on draft	Electronic MS Word, PDF upon request
Other Tasks		
Meetings as needed to discuss the sampling results with EPA, City/State.	As needed.	Pending analytical data receipt

1.1. Project Organization, Responsibilities and Authority

The project organization and contact information for EPA and USACE staff is presented in Table 2 below.

Table 2. Project Organization Table

Personnel	Contact Information	Title/Role
Joanne LaBaw	EPA Region 10 (ECL-122) 1200 Sixth Ave., Suite 900 Seattle, WA 98101 206-553-2594 labaw.joanne@epa.gov	EPA Targeted Brownfields Assessment (TBA) Coordinator

Personnel	Contact Information	Title/Role
Don Matheny	EPA Region 10 Chemist/CLP COR/RSCC 1200 Sixth Ave Suite 900, OERA-140, Seattle, WA 98101 206-553-2599 matheny.don@epa.gov	EPA Chemist; EPA Contract Laboratory Program (CLP) Contracting Officer's Representative (COR); EPA Regional Sample Control Center (RSCC) coordinator
Veronica Henzi	U.S. Army Corps of Engineers 4735 E. Marginal Way S, Bldg 1202 Seattle, WA 98134-2385 phone: 206-316-3973 veronica.j.henzi@usace.army.mil	USACE Project Manager
Marlowe Laubach	U.S. Army Corps of Engineers 4735 E. Marginal Way S, Bldg 1202 Seattle, WA 98134-2385 phone: 206-764-4480 Marlowe.d.laubach@usace.army.mil	USACE COR
Joseph Marsh	U.S. Army Corps of Engineers 735 E. Marginal Way S, Bldg 1202 Seattle, WA 98134-2385 phone: 206-316-3847 joseph.r.marsh@usace.army.mil	USACE Field Sampling Lead/Site Safety and Health Officer
Jacob Williams	U.S. Army Corps of Engineers 735 E. Marginal Way S, Bldg 1202 Seattle, WA 98134-2385 phone: 206-316-3157 Jacob.a.williams@usace.army.mil	USACE Chemist

1.2. Roles and Responsibilities

EPA TBA Coordinator

The EPA TBA Coordinator, Joanne LaBaw, is responsible for providing direction to USACE and keeping the City of Jerome apprised of activities and results. She will also coordinate internally with her EPA peers to facilitate review of this WP-QAPP and secure funding.

EPA Chemist/CLP COR/RSCC coordinator

The EPA Chemist, Don Matheny, will serve as the CLP COR and the RSCC coordinator. He will review this WP-QAPP, coordinate with the Manchester Environmental Laboratory (MEL) and the CLP laboratory, and be available to answer questions regarding data validation and availability of EPA-generated data.

USACE Project Manager

The project manager (PM), Veronica Henzi, is responsible for the execution of the scope, schedule, and budget for the Jerome Butte assessment work upon behalf of EPA. She is the primary POC for communications with EPA. The USACE PM will oversee all activities of the USACE project delivery team (PDT), including quality assurance reviews, and maintain regular coordination (update email/calls; scheduled meetings at least quarterly) with the EPA TBA coordinator to ensure adequate and timely flow of information for all work required under this agreement. The USACE PM will ensure that USACE staff do not disclose any data generated or reviewed under this contract to the news media, or comment on the safety of drinking water or status of work related to this project unless previously coordinated and approved by the EPA TBA Coordinator. The USACE PM also has the authority stop work of USACE staff. The USACE PM is the primary document controller for the WP-QAPP.

USACE Contracting Officer's Representative (COR)

The COR, Marlowe Laubach, ensures that the laboratory contract requirements are carried out in accordance with the terms of the contract(s). The COR is responsible for contractual oversight, verifying performance, and paying invoices for contractor-related work.

USACE Project Chemist

The project chemist, Jacob Williams, is directly responsible for laboratory coordination and matters related to chemistry. He shall be responsible for providing additional guidance to the field sampling lead (Joseph Marsh) in any matters relating to project chemistry and data quality. He will also review analytical data as they become available to ensure conformance with quality standards, identify quality problems and verify corrective actions, ensure that electronic data are accurate and complete, and serve as a point of contact for issues related to environmental chemistry. He will also receive data reviews and subsequent electronic data deliverables (EDDs) for the MEL and CLP data. He will register with EPA's Sample Management Office (SMO) portal and retrieve CLP EDDs from EPA's Electronic Data eXchange & Evaluation System (EXES), which is a web based automated data review/evaluation tool. He will validate the private analytical data (i.e., data not from the MEL or CLP lab).

USACE Field Sampling Lead/Site Health and Safety Officer

Joseph Marsh is the designated field sampling lead and site safety and health officer (SSHO) for this project. He is responsible for coordinating the sampling visit with groundwater well owners/tenants, execution of sampling, and shipping of samples to the project laboratories. Mr. Marsh has full stop work authority if conditions exist that are adverse to personnel health and safety. He ensures the field activities are carried out per the Site Safety and Health Plan (SSHP; **Appendix A**) and the Sampling Standard Operating Procedure (SOP; **Appendix B**). He also leads the readiness review meeting before each sampling event to ensure that field personnel are familiar with and adhere to proper sampling procedures, field measurement techniques, sample identification, and chain-of-custody (CoC) procedures. He will upload CoC information to the SMO portal daily. He will also be inputting sample

information into Scribe, which is EPA's online tool for managing environmental data. He may communicate directly with the EPA TBA Coordinator during the field sampling event, but, if so, will keep the USACE PM concurrently informed.

Special Training Requirements and Certifications

Project staff shall be qualified to perform their assigned jobs. Field sampling personnel conducting or monitoring sampling activities are to be trained by the field sampling lead in accordance with established USACE protocols.

Field Staff

All project staff participating in on-site field activities shall have current HAZWOPER training in accordance with 29 Code of Federal Regulations (CFR) Part 1910.120. The field sampling lead (Joe Marsh) has HAZWOPER Supervisor training in accordance with the same standard as well as a current certification in first aid and CPR.

Laboratory Contact

The analytical laboratories and applicable information that will be used for this project are listed below in Table 3.

Table 3. Analytical Laboratories, Contacts, and Analyses

Lab Name	Address	POC	Contact Info	Analyses
Manchester Environmental Laboratory	7411 Beach Drive East Port Orchard, WA 98366	Karen Norton/ Kim Wood	360-871-8760, Norton.karen@epa.gov (address samples to Karen)	Metals and Nitrates/Nitrites
EPA CLP Lab (specific lab TBD)	TBD	Don Matheny	206-553-2599 matheny.don@epa.gov	Volatile Organic Compounds (VOCs)
Anatek Labs Inc.	1282 Alturas Dr, Moscow, ID 83843	Justin Doty	208-883-2839, justin@anateklabs.com	Synthetic Organic Compounds (SOCs)[1] and radionuclides
Magic Valley Labs Inc.	210 Addison Ave, Twin Falls, ID 83301	Danielle Brown	208-733-4250, dbrown@magicvalleylabs.com	Fecal Coliform

1-SOCs include SVOCS (which include polycyclic aromatic hydrocarbon [PAHs]), herbicides, pesticides, polychlorinated biphenyls (PCBs), and furans

2- Applicable accreditations for these labs are included as **Appendix C.**

1.3. Project Planning/Problem Definition

The goal of this work is to determine the presence or absence of a suite of contaminants in groundwater. If present, the primary suspected source is an old landfill, though neighboring agricultural activities may have had some influence as well. The WP-QAPP will ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that the data meet data quality objectives. Measured chemical concentrations will be compared to the State of Idaho drinking water standards and regulations (maximum contaminant levels (MCLs)), in order to determine the magnitude of contamination, if it exists.

Up to 10 private wells will be sampled (pending receipt of signed access agreements). To achieve the maximum cost savings and data quality, it is preferable to collect groundwater samples from a tap or water discharge point closest to each wellhead using existing pumps.[1] This WP-QAPP may be modified for the number of wells sampled from the tap versus directly from the well. Coordination with the EPA TBA Coordinator, the EPA Manchester laboratory, and other laboratories will occur during development of the WP-QAPP.

1.4. Project Quality Objectives and Measurement Performance Criteria

Project quality objectives (PQOs) are developed through the systematic planning process as described in the Uniform Federal Policy (UFP) QAPP Guidance (IDQTF 2005). PQOs are used to determine the type, quantity, and quality of data needed for decision-making. PQOs for the Site are listed in Table 4. Due to the small number of samples being collected for this event, the completeness goal is 100%. Completeness is defined in this QAPP as the number of usable/valid analytical results based on the planned number. Assuming eight samples are submitted to the labs, eight sets of usable analytical results are expected. However, since 100% is a goal, and samples may break during transit or in the lab, a value between 80 and 100% will still be considered acceptable for decision-making.

[1] USACE, based on research to date, expects that the wells will have existing, submersible impeller pumps since the wells are used for irrigation or domestic uses; thus, USACE will not be bringing any pumps to the field. In addition, the deep depths would be cost-prohibitive for use of a portable pump.

Table 4. Project Quality Objectives

Objective	Action	Monitoring Activity	Well Type	Data Use/Decision
Determine if contaminants are present in the groundwater in the immediate vicinity of the former landfill in Jerome, ID.	Sample from private wells in various gradients, for a wide suite of analytes, near the former landfill.	Currently, only one sampling event is scheduled. It is to-be-determined if a future sampling event will occur, based on the results received from the first event.	Private Wells	Data will inform end users of the presence or absence of groundwater contaminants in this area. Future uses of these data may promote using water in this area for drinking water in the city of Jerome.

2. DATA GENERATION AND ACQUISITION

The following sections discuss data acquisition and generation related to sampling and analytical tasks. Through project planning and coordination with EPA, the project team has agreed on the purpose of the project, the environmental questions to ask, and the environmental decisions to make. PQOs have been developed (see Section 1.4.) that specify the type of data needed to ensure that project data can be used for the intended purpose to answer specific environmental questions, support environmental decisions, and determine technical activities that will be conducted.

Groundwater sampling will occur to support environmental decision-making, and Table 5 below indicates the data collection and analysis activities that are expected be performed.

Table 5. Project Sampling and Analytical Tasks

Sampling Tasks
Sample up to 10 private wells from tap or discharge point closest to wellhead (assume well contains operating pump). Obtain static water level measurements (if feasible) and GPS elevation data from as many sampled wells as possible.
Analytical Tasks
All water samples will be submitted for a broad analytical suite to account for potential contaminants that may be associated with nearby source types (the landfill, dairy, and airport). **See Appendix D.** This suite will consist of VOCs; SOCs including pesticides, herbicides, PCBs, SVOCS (including PAHs), and furans; metals, nitrate, nitrite, bacteria, and radionuclides.
Quality Control Tasks
All matrices will have the following QC samples analyzed: matrix spikes/matrix spike duplicates (MS/MSDs) and volatile organic analysis (VOA) trip blanks. Analytical methods will include initial calibrations, continuing calibrations, tuning, reagent blanks, surrogates, replicates, laboratory control spikes, and all other applicable QC defined in the method.
Secondary Data

No use of numerical secondary data is planned.
Data Management Tasks
Analytical data and well coordinates will be placed into the EQuIS™ database and the Scribe database, and can be displayed in an Excel spreadsheet after validation.
Documentation and Records
GPS locations will be documented for all samples collected, and records/field measurements for each sample will be documented in field notebooks. CoC forms, airbills, and sample logs will be collected for each sample.
Data Packages
All analytical data packages will be provided to USACE electronically in a "hard copy format" (a PDF document or similar) and as an EDD (A1/A3, Excel, or similar). Desired numerical detection limits are specified in the purchase order.
Assessments and Audits
Sampling SOPs have been reviewed. Field sampling records (daily summary reports) will undergo review the day after the samples are collected. Laboratory sample receipt reports will be reviewed the day after samples are received. No field or laboratory technical systems audits are expected to be performed.
Data Review Tasks
The laboratory performing analyses of samples will verify that all data are complete for samples received. Data will be validated using the principles of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (EPA, 2016). Validated data will be reviewed. Data usability will be assessed (e.g., measurement performance criteria (MPC) met? Geographic coordinates accurate?) Data from EPA labs will be validated by EPA. All data from private labs will be validated by the USACE chemist. Measurement performance criteria set in WP-QAPP will be checked. Data limitations will be determined. Data compared to project objectives. If necessary, corrective action initiated; data are placed in database; tables, charts, and graphs are generated.

2.1. Sampling Process Design and Rationale

The sampling design and strategy addressed in this WP-QAPP are based on judgment related to current well locations with respect to the suspected groundwater impact from the adjacent former landfill. The Idaho Department of Environmental Quality (IDEQ) has expressed concerns about the possibility of groundwater contamination from the nearby former landfill, as well as other proximal possible sources of contamination. The strategy is intended to assist in determining the presence or absence of contamination in site groundwater, and, if present, if contamination is above drinking water MCLs. The existing well locations for sample collection are presented in **Appendix E** and indicated by white arrows.

The basis for the number and placement of samples (not including QC samples) is described in Table 6 (private wells selected for sampling) below. All wells on properties with signed access agreements will be sampled in the spring of 2017 when all wells are operational. In addition, groundwater levels will be measured if feasible.

Table 6. Private Wells Selected for Sampling, Number of Samples, Rationale

Well ID	Well Coordinates		Number of Samples	Sampling Rationale
	Northing	Easting		
WP-01	TBD	TBD	1	Potentially downgradient of former landfill (approximately 3 miles away from former landfill).
WP-02	TBD	TBD	1	Potentially downgradient of former landfill (approximately ¾ mile away from former landfill).
WP-03	TBD	TBD	1	Potentially downgradient of former landfill (approximately ½ mile away from former landfill).
WP-04	TBD	TBD	1	Potentially upgradient of former landfill, to provide for background concentrations (approximately 1 mile away from former landfill).
WP-05	TBD	TBD	1	Potentially downgradient of former landfill (approximately ½ mile away from former landfill).
WP-06	TBD	TBD	1	Potentially downgradient of former landfill (approximately ½ mile away from former landfill).
WP-07	TBD	TBD	1	Potentially downgradient of former landfill (approximately ½ mile away from former landfill).
WP-08	TBD	TBD	1	Potentially upgradient of former landfill (approximately ½ mile away from former landfill).
WP-09	TBD	TBD	1	Pending access agreement
WP-10	TBD	TBD	1	Pending access agreement

2.2. Sample Collection Procedures

Sampling activities will proceed after signed access agreements have been received and pumps have been confirmed as operational. The USACE environmental field team shall coordinate with each landowner to setup a mutually agreeable date and time to arrive for sample collection. The team shall arrive on site with all sample containers, coolers, equipment, and supplies required to collect representative groundwater samples from the tap or water discharge point nearest to the wellhead. Photographs will be taken of each sample point, and well system descriptions recorded in the project field book. All private wells will be sampled in accordance with the sampling SOP. Static water level measurements shall be recorded if access to an opening in the well casing is available and safe to approach. GPS coordinates shall also be recorded. New nitrile gloves shall be donned before sampling at each well location. Excess sample water will be discharged to the ground surface after sampling at each location. The well site shall be left as it was found. No trash shall be left behind, and all gates will be closed upon departing the property as required. IDEQ and EPA representatives may assist with logistics and accompany the USACE team to each location at USACE's discretion.

2.2.1. Sample Containers, Quantities, Volumes, Preservation, and Holding Times

All analytical sample containers will be obtained from a source that certifies them to be clean and that performs appropriate QC analyses to ensure cleanliness. All samples will be collected as grab samples. Each sample will be collected in its appropriate sampling bottle using an appropriate sampling method, as specified by the lab. Table 7 describes for each group of analytes the required containers, quantities, minimum sample volume, preservation technique, and holding time for groundwater samples.

Table 7. Sample Containers, Quantities, Volumes, Preservation, and Holding Times for Water Samples

Analytes	Lab	Methods	Container type/quantity	Preservation (all 4°C +/- 2°C)	Holding Time	Number of field samples	Trip Blanks	Number of MS/MSD samples	Total number of sample containers[1]
Metals	MEL	EPA Method 200.8 (or similar)	500 mL HPDE (round plastic)	HNO_3 to pH < 2	180 Days	10	0	1	12
Nitrate + Nitrite	MEL	EPA Method 353.2	250 mL HDPE (square plastic)	H_2SO_4 to pH < 2	28 days	10	0	1	12
VOCs	CLP – TBD	EPA Method 524.3 (CLP SOM02.4 Trace Level VOC)	Three 40-ml VOA amber vials	-pH<2 using 25 mg ascorbic and 200 mg maleic acid -Cool to <10C for first 48 hours. If acidified sample foams, discard and submit unacidified sample (must be preserved within 24 hours)	14 days for analysis	10	2 bottles per cooler	1	36
SOCs	Anatek	EPA 525	2 x 1L amber	Sodium sulfite	5 Days	10	2 bottles per cooler	1	24
		EPA 515/548	250 mL amber	Sodium thiosulfate		10		1	12
		EPA 549	500 mL HDPE			10		1	12
		EPA 505	2 x 40 mL amber vial			10		1	24
		EPA 504	2 x 40 mL clear vial			10		1	24
		EPA 547	40 mL clear vial			10		1	12
		EPA 531	40 mL amber vial	Potassium dihydrogen citrate		10		1	12
Radio-nuclides	Anatek	EPA Method 900.0	1L HDPE	NA	6 months	10	0	1	12
Fecal coliform	Magic Valley	Method SM 9223B	125 mL plastic bottle	NA	24 hrs	10	0	1	12

1-The term "MS/MSD sample" encompasses two samples; therefore, an MS/MSD for VOCs, for example, would require six containers (three vials for the MS and three vials for the MSD).

The analytical method, time, date, and sampler's initials will be written on each sample label. Sample labels will be completed by the sampling team leaders, then attached to each sample container after each container is filled and capped. The labeled containers will be placed in plastic Ziploc® storage bags and packed in bubble bags to ensure label integrity and prevent breakage.

2.2.2. Decontamination Procedures

In general, only water level indicator sensors and cables will be decontaminated between wells, by rinsing with a distilled water spray. The remaining equipment used for groundwater sampling does not need to be decontaminated because it is either dedicated, one-time use (e.g., disposable) equipment, or equipment not used for sample collection (flow cell and tubing).

2.2.3. Field Documentation Procedures

Field documentation provides a permanent record of field activities and can be used, if necessary, to trace possible introduction of field sampling error. Observations and measurements taken in the field will be recorded in field logbooks and purge logs.

All field notes will be maintained in a numbered, bound logbook, which is assigned to a specific person who is responsible for entry of information into the logbook. All information pertinent to the sampling effort will be recorded in a field logbook. The Field Sampling Lead has overall responsibility for accuracy and completeness of field logbooks. Each page/form will be consecutively numbered. All entries will be made in indelible ink and all corrections will consist of lined-out deletions that are initialed and dated by the person making the corrections. Each page of the logbook should be signed and dated by the personnel responsible for observations. As a minimum, the applicable items for the entry into the logbook are listed below.

General Information

- Date
- Start and finish times of work
- Weather conditions
- Name and signature of person making entry
- Names of personnel present
- Names of visitors

Sampling Information

- Date and time of sample
- Photograph identification
- Location of sample (sample port or faucet)
- Type of sample
- Sample identification number
- Associated QC samples
- Flow rate
- Purge time

- Any unusual observations

The original field notes will be scanned and submitted as part of the final report. Records will contain sufficient information so that someone could reconstruct the sampling activity without relying on the collector's memory. The USACE Field Sampling Lead will keep a master list of all field logbooks assigned to the sampling personnel. The field sampling lead will review all daily entries in the field logbooks.

2.2.3.1. Photographs

Digital photographs will be taken to document sample locations, but only during the first round of sampling. The subject of each photograph is the sampling location, the collection activity, and the associated sample jars. Digital photographs will be provided electronically to the USACE PM with the associated field logbook information. Information about each photograph will be recorded in the field logbook. The information will include:

- Date and time
- Compass direction
- Weather conditions (if applicable)
- Subject
- Purpose for photograph being taken
- Number of photograph
- Name of person taking photograph.

All photographs will be uniquely identified. Photograph identification system is as follows:

Date - Location ID - Photo Number

- The sampling date will be a 6-digit number for yymmdd (March 21, 2017 would be 170321);
- A dash "-" will follow the sampling date;
- The name of the private domestic well (i.e. WP12);
- A dash "-" will follow the Location ID; and
- The sequential number of the photograph at that site and date - starting with 01.

As an example, **170321-WP12-2** represents a picture taken on March 21, 2017, at private domestic well WP 12, and indicates the second (-2) picture taken.

2.2.3.2. Daily Summary Reports

Daily Summary Reports (DSRs) will be completed by the Field Team Lead for each day of field work and transmitted electronically to the USACE Seattle District Project Team. The technical lead will review the Chain of Custody forms within 24 hours of receipt from the field team to ensure compliance with laboratory contract requirements. The DSR will summarize the information from field log books. In addition, the following information will be collected as appropriate:

- Field data collection sheets
- Chain-of-custody records
- Airbills

- Corrective action reports
- Documentation of corrective action results
- Documentation of deviation from methods
- Electronic data deliverables (Field results in Excel®)
- Identification of QC samples
- Meteorological data
- Sampling instrument decontamination records
- Sampling instrument calibration logs
- Standards traceability records
- Sampling location and sampling plan
- Sampling notes and drilling logs
- Time, date, location, and weather conditions
- Description of the subject photographed as well as date time and compass direction
- Photographs (include in the logbook or recorded in a separate field photography log)

2.2.4. Sample Handling and Tracking System

A sample handling and tracking system traces the path from sample collection to disposal. Table 8 summarizes the overall sampling handling and management system for this project. Specific sample tracking systems, such as numbering and delivery processes, support the CoC procedures, which in turn help to ensure sample authenticity and data defensibility. These processes are described further below.

Table 8. Sample Handling and Management

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT (The Field Lead has ultimate responsibility for performing quality control checks on all the steps below)
Sample Collection (Personnel/Organization): The field lead is responsible for implementing the SOP for sampling.
Sample Packaging (Personnel/Organization): Performed by USACE Field Team.
Coordination of Shipment (Personnel/Organization): Performed by USACE Field Team.
Type of Shipment/Carrier: Federal Express for Overnight Delivery
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization): Assigned lab personnel
Sample Custody and Storage (Personnel/Organization): Assigned lab personnel
Sample Preparation (Personnel/Organization): Assigned lab personnel
Sample Determinative Analysis (Personnel/Organization): Assigned lab personnel
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection): Samples will not be stored in the field, but will be shipped within 24 hours of collection. If in an emergency they are stored in the field they will be kept in a cooler kept at 4±2 degrees Celsius.
SAMPLE DISPOSAL
Personnel/Organization: Assigned Lab Sample Custodians
Number of Days from Analysis: At least 60 days

The procedures below for numbering, delivery, and custody will be followed to identify and track samples that are collected in the field and shipped to the laboratory for analysis. The Project Chemist will also track samples from collection through data validation using an Excel spreadsheet.

2.2.4.1. Sample Numbering System

Each sample is to be assigned a unique sample identification number by the Project Chemist or designee. Samples for matrix spike and matrix spike duplicates are to be designated on the chain-of-custody sheets and on the sample label. A list of all sample identification numbers will be maintained in the field logbook. Sample duplicates (if used) shall be submitted "blind" to the lab; however, the USACE team will know that N = normal sample and D = duplicate sample.

Wells will be assigned identification numbers. The sample identification system will include the Well ID and a string of other relevant identifiers. Each sample must have a unique number. The specific sample ID's will be created closer to the sampling date. Sample ID's being sent to MEL and CLP labs will have a unique sample ID assigned by EPA.

2.2.4.2. Sample Delivery

Sample delivery procedures include packaging, labeling, and shipment to the laboratory. These procedures are designed (1) to preserve sample quality so that analyses will yield results representative of site conditions, (2) to protect and inform sample handlers, including shippers and laboratory personnel, and (3) to provide a paper trail to allow cross referencing of sample collection locations with analytical results. All samples will be labeled with its own sample ID and all other applicable information. All samples will be packaged in bubble wrap and secured in iced coolers wrapped in tape (including CoC tape) for shipment. A CoC label will be affixed to the inside of each cooler to describe its contents and track its trail. **Note: it is important for the bacterial samples to be analyzed within 24 hours.** For samples shipped to the CLP laboratory, an electronic CoC file (Scribe XML export file) will be uploaded to the SMO portal the same day of shipping. The EPA RSCC coordinator (Don Matheny) will also be notified by Joe Marsh of sample shipments going to the CLP and Manchester laboratories via email. This will include a copy of the CoC Scribe XML file, shipper's tracking number, and number of samples sent to the labs. The RSCC coordinator will then confirm sample delivery and manage any sample issues that may arise between the samplers and the labs (i.e., sample breakage, preservation, etc.).

2.2.4.3. Sample Custody

A sample is in "custody" if it is in the actual physical possession of authorized personnel or in a secure area that is restricted to authorized personnel. Custody procedures ensure data authenticity and defensibility. CoC forms will accompany sample containers during transit to the laboratory and be checked by the laboratory upon receipt.

2.3. Analytical Tasks

Once samples have been collected, they will be analyzed by the EPA (including CLP) laboratories and the private analytical laboratories. The USACE chemist will validate the private analytical data, and EPA staff

will validate the EPA analytical data. The following sections address all components of project-specific analytical measurements; method and laboratory-specific QC measurements; acceptance criteria; corrective actions; calibration procedures; equipment and supply maintenance; testing; and inspection requirements. Modifications to approved procedures, alternate procedures, or additional procedures are to be pre-approved in writing by the USACE Project Chemist.

2.3.1. Analytical Methods

Analytical methods used for groundwater analysis are summarized briefly below, and many of the methods can be obtained from 40 CFR Part 141 (http://www.ecfr.gov/cgi-bin/text-idx?SID=f501e57b8adb6937ff7299eec178f5d5&mc=true&tpl=/ecfrbrowse/Title40/40cfrv25_02.tpl#0). Laboratory SOPs are not included in this WP-QAPP; however, the laboratories are certified in accordance with the appropriate accreditations. Laboratory SOPs can be requested from the laboratory if needed.

2.3.1.1. EPA Method 200.8 (or other EPA preferred method done by CLP lab)

Method 200.8 (or similar method) is used for analysis of metals in drinking water.

2.3.1.2. EPA Method 353.2

EPA Method 353.2 will be used for analysis of total nitrates and nitrites in drinking water.

2.3.1.3. EPA Method 524.3

Method 524.3 is used for analysis of VOCs in drinking water.

2.3.1.4. EPA Method 525

Method 525 is used for analysis of a subset of SOCs in drinking water.

2.3.1.5. EPA Method 515/548

Method 515/548 is used for analysis of a subset of SOCs in drinking water.

2.3.1.6. EPA Method 549

Method 549 is used for analysis of a subset of SOCs in drinking water.

2.3.1.7. EPA Method 505

Method 505 is used for analysis of a subset of SOCs in drinking water.

2.3.1.8. EPA Method 504

Method 504 is used for analysis of a subset of SOCs in drinking water.

2.3.1.9. EPA Method 547

Method 547 is used for analysis of a subset of SOCs in drinking water.

2.3.1.10. EPA Method 531

Method 531 is used for analysis of a subset of SOCs in drinking water.

2.3.1.11. EPA Method 900.0

Method 900.0 is used for analysis of gross, alpha and beta radioactivity.

2.3.1.1. Method SM 9223B

Method SM 9223B is used for analysis of total coliform (bacteria) in drinking water.

2.3.2. Analytical Instrument Calibration, Maintenance, Testing, and Inspection Procedures

Calibration and associated procedures shall be consistent with the requirements of the methods listed above.

2.4. Quality Control Samples

Quality control (QC) samples are collected and analyzed for the purpose of assessing the quality of the sampling and analysis performed by the field personnel and the primary laboratory. The Project Chemist will coordinate selection of QC samples prior to each sampling event.

2.4.1. Field Quality Control Samples

Field samples analyzed for the purpose of assessing the quality of sampling and analysis are to be submitted blind to the analytical laboratory and referred to as field QC samples.

2.4.1.1. Field Duplicates

No field duplicates will be taken for this sampling due to the small number of samples collected and limited budget.

2.4.1.2. Trip Blanks

The trip blank measures cumulative contamination derived from field sampling equipment, sample transit, the sampling site, and sample storage. Trip blanks are used to assess representativeness. A trip blank may be provided for each cooler. It will consist of preserved 40-ml VOA vials containing analyte-free water. The analyte-free water must be preserved and prepared using the same sample preparation protocols as for the normal samples. The vial will be placed in the same cooler as the samples collected at the beginning of the sampling day. Adequate trips blanks for this sampling event will be provided to the USACE sampling team by Anatek Laboratory and Manchester Environmental Laboratory.

2.4.1.3. Field Blanks

Field blanks are used to check for procedural contamination, cross-contamination, and contamination during shipment and storage of samples, and ambient contamination from VOCs. Field equipment

blanks are collected at selected sampling locations by pouring analyte-free water through the sampling equipment and collecting the water in prepared containers. No field blanks will be taken due to the small number of samples collected and limited budget.

2.4.2. Analytical Method Quality Control Samples

Method QC includes the analyses and activities required to ensure that the analytical system is in control prior to and during an analytical run. Method QC requirements for this project include the following: method blanks, surrogate spikes, matrix spikes/matrix spike duplicate pairs, and laboratory control samples.

2.4.2.1. Method Blanks

Method blanks are composed of organic/analyte-free water processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure. Method blanks verify that the measurement system is free of contamination.

2.4.2.2. Laboratory Control Samples

Laboratory control sample (LCSs) are composed of organic/analyte-free water spiked with verified amounts of analytes. They are generally used to establish intra-laboratory or analyst-specific precision or to assess the performance of all or a portion of the measurement system. The LCS is analyzed in the same manner as a sample, including preservation.

2.4.2.3. Matrix Spike and Matrix Spike Duplicate (MS/MSD)

MS/MSD samples are used to evaluate matrix interference and to determine laboratory accuracy and precision. MS/MSDs will be collected over a range of chemical concentrations. One MS/MSD per method will be taken for this sampling event, at a location that is up to the discretion of the field sampling team.

2.4.2.4. Surrogates

Surrogates are substances with properties that mimic the analyte of interest. A surrogate is unlikely to be found in environment samples, and is therefore added to them for quality control purposes.

3. ASSESSMENT AND OVERSIGHT

The following section describes assessments that are designed to ensure that planned project activities are implemented as described in the WP-QAPP and that reports are provided to apprise management of the project status and any issues that arise during execution. Assessments enable the project manager or upper managers to implement corrective action measures in a timely manner, thereby minimizing the impact of non-conformances on achieving PQOs.

3.1. Planned Assessments

The assessments planned for this project are described below.

3.1.1. Readiness Review

A readiness review is a systematic documented review process for the startup or continued use of a laboratory or field activity, including a review of all in-field data collection objectives. Readiness reviews will be conducted by the USACE field lead prior to each mobilization and the USACE project chemist prior to beginning of analysis. Readiness reviews will be documented and saved for the project record.

3.1.2. Field Sampling Technical Systems Audit (TSA)

A field sampling TSA is a thorough on-site audit during which sampling design, equipment, instrument, supplies, personnel, training, sampling procedures, CoC procedures, sample handling and tracking, data reporting, data handling and management, data tracking and control, and data review are examined for conformance to the QAPP. No TSAs are currently planned. However, EPA or USACE may use discretion in executing an audit at any point.

3.1.3. Laboratory TSA

Laboratory TSAs check the facility, equipment, instrument, supplies, personnel, training, analytical method and procedures, laboratory procedures, sample handling and tracking, data reporting, data deliverables, data handling and management, data tracking, data tracking and control and data review procedures. An audit has been performed on all laboratories and certificates of accreditation have been issued.

3.2. Assessment Findings and Corrective Actions

Laboratory and field operations have established policies and procedures, and they designate authorities for implementing corrective action when nonconforming work or departures from the policies and procedures in the quality system or technical operations have been identified. Both field and laboratory operations shall follow all corrective action requirements in methods and SOPs.

The following laboratory documentation is to be made accessible to the USACE Project Chemist/QA Officer. Corrective actions may be required, at the request of USACE, for the following conditions:

- QC data outside the defined acceptance windows for precision or accuracy
- Blanks or Laboratory Control Samples (LCS) that contain contaminants above acceptable levels stated in the Data Quality Objectives.
- Undesirable trends in spike or surrogate recoveries or RPD between spiked duplicates
- Unusual changes in method detection limits
- Deficiencies identified during internal or external audits or from the results of performance

The following corrective actions should be taken for common problems:

Incoming Samples - Problems noted during sample receipt are to be documented on the Cooler Receipt Checklist Form. The USACE Project Chemist is to be notified for problem resolution.

Sample Holding Times - If a maximum holding time is or may be exceeded by the laboratory, the USACE Project Chemist must be notified for problem resolution. The USACE Project Chemist may require re-sampling for the requested parameters.

Instrument Calibration - Sample analysis may not proceed until initial calibrations meet method criteria. Calibrations must meet method time requirements or recalibration must be performed. Continuing calibrations that do not meet accuracy criteria should result in a review of the calibration, rerun of the appropriate calibration standards, and reanalysis of samples affected back to the previous acceptable calibration check.

Limit of Quantitation (LOQ) - Appropriate sample clean-up procedures must be employed to attempt to achieve the practical quantitation limits as stated in the method. If difficulties arise in achieving these limits due to a particular sample matrix, the laboratory should notify the USACE Project Chemist of the problem for resolution. Dilutions are to be documented in the case narrative along with the revised practical quantitation limits for those analytes directly affected. Analytes detected above the method detection limits (MDLs) but below the practical limit(s) of quantitation are to be reported as estimated values and qualified "J".

Method Quality Control - Results related to method QC, including blank contamination, duplicate measurement reproducibility, MS/MSD recoveries, surrogate recoveries, LCS recoveries, and other method-specified QC measures are to meet the laboratory's SOPs and PQOs specified in this plan. Otherwise, the affected samples may be reanalyzed and/or re-extracted and reanalyzed within method-required holding times to verify the presence or absence of matrix effects. In order to confirm matrix effects, QC results must observe the same direction and magnitude (ten times) bias. The USACE Project Chemist should be notified as soon as possible to discuss appropriate corrective action.

Calculation Errors - Reports must be reissued if calculation and/or reporting errors are noted with any given data package. The case narrative is to state the reason(s) for re-issuance of a report.

3.3. Quality Assurance Management Reports

The primary quality assurance management reports are the WP-QAPP (this document). In addition, regular communication with EPA will keep EPA apprised of project status so that EPA can provide direction as needed to accomplish project objectives.

4. DATA MANAGEMENT AND DOCUMENTATION

The following sections discuss data management and documentation related to the WP-QAPP and laboratory-generated data.

4.1. WP-QAPP

An electronic copy of the WP-QAPP (including appendices) will be stored in USACE project files and provided to EPA.

4.2. Sampling Report

Upon completion of the sampling event and receipt/review of the validated data, USACE will prepare a report as summarized in the Project Schedule (Table 1). The report will include the following:

- Executive summary
- Sampling and field activities, including anomalous circumstances or problems encountered
- Analysis, data validation, and results
- State well inventory database search results
- Summary and discussion
- Recommendations
- Figures, tables, and appendices

The appendices will include logs, field notes, photographic records, laboratory analytical reports, the quality control sampling report (QCSR), data validation reports, and data summary tables with associated validation flags.

4.3. Laboratory Documentation (Data Package Deliverables)

4.3.1. Private laboratory documentation

The analytical data packages from the private laboratories will be provided to the USACE Chemist as Stage 2a deliverables within 21 working days from sample receipt at the lab. For the 2017 sampling event, the Stage 2a analytical data packages will be validated by the USACE chemist for 100% of all samples analyzed by the laboratory.

4.3.2. CLP and MEL documentation

The analytical data packages, including validated data, from the CLP lab and the MEL will be submitted to USACE within 40 working days (8 weeks) from sample receipt at the labs.

4.3.3. Narrative

Results for all laboratory analyses will include the elements listed below:

Shipping/Receiving Documents and Internal Laboratory Chain-Of-Custody Records:

- Airbills
- Chain-of Custody Records
- Sample Tags
- Sample Log-In Sheet
- Miscellaneous Shipping/Receiving Record
- Internal Lab. Sample Transfer Records and Tracking Sheets

Sample Data:

- Tabulated Summary Form for Field Sample and Performance Evaluation Sample Result (Organic Form I)
- Reconstructed total ion chromatogram (RIC) for each sample
- Raw spectra of target compound and background-subtracted spectrum of target compound for each sample
- Mass spectra of all reported
- Chromatograms from all columns for each sample
- Gas chromatograph (GC) integration report or data system printouts and calibration plots for each sample
- Sample preparation/extraction log and logbook pages
- Sample analysis run log and logbook pages
- Other analytical raw data

Standards Data:

- Method Detection Limit Study Tabulated Summary Form
- Initial Calibration Tabulated Summary Form
- Continuing Calibration Tabulated Summary Form
- Reconstructed Ion Chromatographs (RICs) and quantitation reports for all GC/MS standards
- GC chromatograms and data system printouts for all GC standards
- Standards preparation logbook pages

QC Data:

- Tuning and Mass Calibration Tabulated Summary Form
- Surrogate Percent Recovery Tabulated Summary Form
- MS/MSD Recovery Tabulated Summary Form
- Method Blank Tabulated Summary Form
- Internal Standard Area and Retention Time Tabulated Summary Form
- QC Raw Data - RIC, chromatograms, quantitation reports, integration reports, mass spectra, etc.
- QC sample preparation logbook pages

Miscellaneous Data:

- Original preparation and analysis forms or copies of preparation and analysis logbook pages
- Screening records (when applicable)
- All instrument output, including strip charts, from screening activities (when applicable)
- Preparation logs raw data
- Other records (e.g., telephone communication log)

All electronic deliverables and hardcopy reports (originals with laboratory signatures) will be delivered to the USACE Project Chemist. USACE will provide EPA with an Excel spreadsheet of data output (e.g., sampling results) from EQuIS at EPA's request.

4.4. Electronic Data Reporting Formats

Private laboratory data will be generated in whichever version is preferred by the laboratory, as long as it is usable by USACE. Scribe, Excel, A1/A3 are all examples of usable data reporting formats acceptable. If other formats are used, they will be verified with USACE. USACE will perform checks to verify errors before delivery for data validation. If the electronic data deliverable (EDD) is found to be non-compliant with the WP-QAPP, immediate corrective action will be taken by the laboratory in order to meet project and contract schedule.

For samples sent to EPA and CLP labs, EPA Scribe software will be used for data management as per the R10 Data Management Plan. Validated/verified analytical data and sample coordinates will be placed in the EQuIS™ database. Data from the Scribe format will be available for input into the EQuIS™ database. The USACE Scribe manager for this project is Jacob Williams.

5. DATA REVIEW, VERIFICATION, AND VALIDATION

Data review is the process by which data are examined and evaluated to varying levels of detail and specificity by a variety of personnel who have different responsibilities within the data management process. It includes verification, validation, and usability assessment. This process ensures the review activities produce scientifically sound data that are of known and documented quality and meet PQOs used in making environmental decisions.

5.1. Laboratory Data Review

All laboratory data packages will include raw data necessary for full validation. Stage 2a analytical data packages will be validated by the USACE chemist for 100% of all samples analyzed by the contracted laboratory.

Three distinct evaluative steps will be used to ensure that project-specific data quality needs are met:

- Data Verification (review for completeness) – Confirmation by examination and provision of objective evidence that the specified requirements (sampling and analytical) have been completed.
- Data Validation – Confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use are fulfilled. Validation is a sampling and analytical process that includes evaluating compliance with method, procedure, or contract requirements and extends to evaluating against criteria based on the quality objectives developed in the QAPP (e.g., the QAPP measurement performance criteria). The purpose of validation is to assess the performance of the sampling and analysis processes to determine the quality of specified data. Data Validation Reports will be generated for each sampling event.
- Data Usability Assessment – Determination of the adequacy of data, based on the results of validation and verification, for the decisions being made. The usability step involves assessing whether the process execution and resulting data meet project quality objectives documented in

the QAPP. Data usability will be reported at the end of each sampling event in a Quality Control Summary Report (QCSR).

Data review will be based on laboratory-specific SOPs conforming to the method and applying the principles of the EPA National Functional Guidelines for Organic and Inorganic Data Review (EPA 2008b; EPA 2014a). If significant deviations arise as a result of initial verification and validation, the level of review will be elevated in order to determine the source and impact of deviations.

Validated electronic data deliverables can be generated in EQuIS™ uploadable format.

5.2. Data Verification and Validation Stages

Data validation and verification stages described below are in accordance with US EPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA QA-R-08-005; 2009).

5.2.1. Stage 1

Verification and validation begins with Stage 1 checks of the laboratory analytical data package consisting of compliance of sample receipt conditions, sample characteristics (e.g., percent moisture), and analytical results (with associated information). The following minimum baseline checks (as relevant) shall be performed on the laboratory analytical data package received for a Stage 1 validation label:

(1) Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requested for analyses.

(2) Requested analytical methods were performed and the analysis dates are present.

(3) Requested target analyte results are reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result (and the uncertainty of each result and clear indication of the type of uncertainty reported if required).

(4) Requested target analyte result units are reported.

(5) Requested reporting limits for all samples are present and results at and below the project-specific reporting limits are clearly identified (including sample detection limits if required).

(6) Sampling dates (including times if needed), date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH and temperature) are documented.

(7) Sample results are evaluated by comparing sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample characteristics (e.g., percent moisture) to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract.

5.2.2. Stage 2A

Stage 2A validation builds on the validation conducted in Stage 1. Stage 2A validation of the laboratory analytical data package consists of the Stage 1 validation plus the verification and validation checks for the compliance of sample-related QC. The following additional minimum baseline checks (as relevant) shall be performed on the laboratory analytical data package received for a Stage 2A Validation label:

(8) Requested methods (handling, preparation, cleanup, and analytical) are performed.

(9) Method dates (including dates, times and duration of analysis for radiation counting measurements and other methods, if needed) for handling (e.g., Toxicity Characteristic Leaching Procedure), preparation, cleanup and analysis are present, as appropriate.

(10) Sample-related QC data and QC acceptance criteria (e.g., method blanks, surrogate recoveries, deuterated monitoring compounds (DMC) recoveries, laboratory control sample (LCS) recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries) are provided and linked to the reported field samples (including the field quality control samples such as trip and equipment blanks).

(11) Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes) have been added, as appropriate.

(12) Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated.

(13) Frequency of QC samples is checked for appropriateness (e.g., one LCS per twenty samples in a preparation batch).

(14) Sample results are evaluated by comparing holding times and sample-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract.

5.2.3. Stage 2B

Stage 2B validation builds on the validation conducted in Stage 2A. Stage 2B validation of the laboratory analytical data package consists of the Stage 2A validation plus the verification and validation checks for the compliance of instrument-related QC. The following additional minimum baseline checks (as relevant) shall be performed on the laboratory analytical data package received for a Stage 2B Validation label:

(15) Initial calibration data (e.g., initial calibration standards, initial calibration verification [ICV] standards, initial calibration blanks [ICBs]) are provided for all requested analytes and linked to field samples reported. For each initial calibration, the calibration type used is present along with the initial calibration equation used including any weighting factor(s) applied and the associated correlation coefficients, as appropriate. Recalculations of the standard concentrations using the initial calibration curve are present, along with their associated percent recoveries, as appropriate

(e.g., if required by the project, method, or contract). For the ICV standard, the associated percent recovery (or percent difference, as appropriate) is present.

(16) Appropriate number and concentration of initial calibration standards are present.

(17) Continuing calibration data (e.g., continuing calibration verification [CCV] standards and continuing calibration blanks [CCBs]) are provided for all requested analytes and linked to field samples reported, as appropriate. For the CCV standard(s), the associated percent recoveries (or percent differences, as appropriate) are present.

(18) Reported samples are bracketed by CCV standards and CCBs standards as appropriate.

(19) Method specific instrument performance checks are present as appropriate (e.g., tunes for mass spectrometry methods).

(20) Frequency of instrument QC samples is checked for appropriateness (e.g., gas chromatography-mass spectroscopy [GC-MS] tunes have been run every 12 hours).

(21) Sample results are evaluated by comparing instrument-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract.

5.2.4. Stage 3 Verification and Validation Checks

Stage 3 validation builds on the validation conducted in Stage 2B. Stage 3 validation of the laboratory analytical data package consists of the Stage 2B validation plus the recalculation of instrument and sample results from the laboratory instrument responses, and comparison of recalculated results to laboratory reported results. The following additional minimum baseline checks (as relevant) shall be performed on the laboratory analytical data package received for a Stage 3 Validation label:

(22) Instrument response data (e.g., GC peak areas) are reported for requested analytes, surrogates, internal standards, and DMCs for all requested field samples, matrix spikes, matrix spike duplicates, LCS, and method blanks as well as calibration data and instrument QC checks (e.g., tunes).

(23) Reported target analyte instrument responses are associated with appropriate internal standard analyte(s) for each (or selected) analyte(s) (for methods using internal standard for calibration).

(24) Fit and appropriateness of the initial calibration curve used or required (e.g., mean calibration factor, regression analysis [linear or non-linear, with or without weighting factors, with or without forcing]) is checked with recalculation of the initial calibration curve for each (or selected) analyte(s) from the instrument response.

(25) Comparison of instrument response to the minimum response requirements for each (or selected) analyte(s).

(26) Recalculation of each (or selected) opening and closing CCV (and CCB) response from the peak data reported for each (or selected) analyte(s) from the instrument response, as appropriate.

(27) Compliance check of recalculated opening and/or closing CCV (and CCB) response to recalculated initial calibration response for each (or selected) analyte(s).

(28) Recalculation of percent ratios for each (or selected) tune from the instrument response, as appropriate.

(29) Compliance check of recalculated percent ratio for each (or selected) tune from the instrument response.

(30) Recalculation of each (or selected) instrument performance check (e.g., instrument blanks,) from the instrument response.

(31) Recalculation and compliance check of retention time windows (for chromatographic methods) for each (or selected) analyte(s) from the laboratory reported retention times.

(32) Recalculation of reported results for each reported (or selected) target analyte(s) from the instrument response.

(33) Recalculation of each (or selected) reported spike recovery (surrogate recoveries, DMC recoveries, LCS recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries) from the instrument response.

(34) Each (or selected) sample result(s) and spike recovery(ies) are evaluated by comparing the recalculated numbers to the laboratory reported numbers according to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract.

Note: Selection of analytes, spikes, and performance evaluation checks for the Stage 3 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including (but not limited to) the type of verification and validation being performed (manual or electronic), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes.

Note: CLP lab data undergo an electronic / manual Stage 3 validation.

5.2.5. Stage 4 Verification and Validation Checks

Stage 4 validation builds on the validation conducted in Stage 3. Stage 4 validation of the laboratory analytical data package consists of the Stage 3 validation plus the evaluation of instrument outputs. The

following additional minimum baseline checks (as relevant) shall be performed on the laboratory analytical data package received for a Stage 4 Validation label:

(35) All required instrument outputs (e.g., chromatograms, mass spectra) for evaluating sample and instrument performance are present.

(36) Sample results are evaluated by checking each (or selected) instrument output (e.g., chromatograms, mass spectra) for correct identification and quantitation of analytes (e.g., peak integrations, use of appropriate internal standards for quantitation, elution order of analytes, and interferences).

(37) Each (or selected) instrument's output(s) is evaluated for confirmation of non-detected or tentatively identified analytes.

Selection of instrument outputs for the Stage 4 validation checks for a laboratory analytical data package being verified and validated generally will depend on many factors including, but not limited to, the type of verification and validation being performed (electronic or manual), requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract, the number of laboratories reporting the data, the number and type of analytical methods reported, the number of analytes reported in each method, and the number of detected analytes.

Note: 100% of MEL data are validated to Stage 4.

5.3. Data Validation Report

A data validation report (DVR) will be generated by the USACE Chemist that encompasses the results of the manual review of private lab data. DVRs will also be provided by EPA for both the CLP lab and MEL data. The CLP DVR will be a shortened version, as most of the review will have been performed electronically. Data validation qualifiers for the EPA data will be the same as those described below in this section. Review of EPA CLP data will be per the 2016 National Functional Guidelines (EPA, 2016). The findings from review of calibration data, raw data, chain of custody, and other technical areas will be integrated together by a professional chemist to complete the validation. Professional judgment shall be used when deciding if qualification of data is applicable. When professional judgment is applied, the rationale shall be provided. Tables of qualified data and the reasons for qualification will also be included in the DVR.

Qualifiers will be added to data during the review as necessary. Qualifiers applied to the data as a result of the review are as follows:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit. The data are usable for decision-making purposes.

UJ Indicates the compound or analyte was analyzed for but not detected. Due to a quality control deficiency identified during data validation, the value reported may not accurately reflect the

sample quantitation limit. The associated value is considered estimated, but the data are generally usable for decision-making purposes.

J Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. False positives or false negatives are unlikely to have been reported and the data are generally usable for decision-making purposes.

J+ Data are qualified as estimated with a high bias. False positives are likely to occur but the data are generally usable for decision-making purposes.

J- Data are qualified as estimated with a low bias. False negatives are likely to occur but the data are generally usable for decision-making purposes.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Note: It is possible that J-qualified data are not suitable for some purposes. For example, a J-qualified concentration with a low bias that is just below a screening value may not be usable to determine whether the analyte concentration is above or below the screening value. The effect of the use of qualified data on the decision-making process must be evaluated as part of the "reconciliation with user requirements" process.

EPA's Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA 2009) also provides a system of codes used to indicate the stage of review that was completed and whether review was completed electronically or manually. These codes are included in the database with the sample concentrations and qualifiers.

5.4. Usability Assessment

A Quality Control Summary Report (QCSR) will be prepared by USACE project chemist that includes an evaluation of overall precision, accuracy, completeness, representativeness, comparability, and sensitivity of the sampling data; it will include an assessment of the overall usability of the data and describe any limitations on its use; and will summarize any audit information, indicating corrective actions taken. The QCSR will be part of the final Data Validation Report.

6. REFERENCES

EPA 2001. EPA Requirements for Quality Assurance Project Plans EPA QA/R-5. EPA/240/B-01/003. March 2001.

EPA 2002. EPA Guidance for Quality Assurance Project Plans EPA QA/G-5. EPA/240/R-01/009. December 2002.

EPA 2009. EPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. EPA QA-R-08-005. January 2009.

EPA 2016. EPA National Functional Guidelines for Superfund Organic Methods Data Review. EPA-540-R-2016-002. September 2016.

IDQTF (Intergovernmental Data Quality Task Force). 2005. Uniform Federal Policy for Quality Assurance Project Plans. March 2005.

7. APPENDICES

Appendix A - Site Safety and Health Plan
Appendix B – SOP for Sampling
Appendix C – Lab Accreditations
Appendix D – Analytes and reporting limits
Appendix E – Well Locations (shown with white arrows)

SITE-SPECIFIC SAFETY AND HEALTH PLAN

PRIVATE WELL GROUNDWATER SAMPLING
JEROME BUTTE TARGETED BROWNFIELDS ASSESSMENT
JEROME, IDAHO

Prepared by
U.S. ARMY CORPS OF ENGINEERS
Seattle District
Technical Services Branch

US Army Corps
of Engineers ®
Seattle District

Prepared for
U.S. EPA Region 10

U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, WA 98101

February 2017
(FINAL)

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LIST OF ACRONYMS

ANSI.....American National Standards Institute

CHSO .....Corporate Health and Safety Officer

CRZ.....Contamination Reduction Zone

SDS..... Safety Data Sheets

OSHA.....Occupational Safety and Health Administration

PPE.....Personal Protective Equipment

SAP.....Sample Analysis Plan

SSHO.....Site Health and Safety Officer

SSHP .....Site-Specific Health and Safety Plan

USACE.....United States Army Corps of Engineers

1. INTRODUCTION, BACKGROUND, AND SCOPE OF WORK

The following paragraphs describe in detail the purpose and scope of the Site-Specific Safety and Health Plan (SSHP), site history, and the project scope of work (SOW). The Activity Hazard Analysis is presented at Attachment 9 of this SSHP.

Purpose and Scope of the Health and Safety Plan

This environmental sampling field project is being executed by the US Army Corps of Engineers (USACE) on behalf of Region 10, US Environmental Protection Agency (USEPA). The general scope of work directs a USACE environmental sampling team in the collection of groundwater samples for analytical analysis from a set number of private wells in the vicinity of the Jerome Butte project, Jerome, Idaho. Groundwater from these wells may potentially contain unknown concentrations of contaminants that might have leached to a deep aquifer from a closed landfill operation near the proposed Jerome Butte industrial park. In the interests of general worker safety and health, the sampling team shall treat all groundwater as contaminated during field sampling, even though well water contamination has not yet been confirmed.

The purpose of this site-specific SSHP is to set guidelines for the safe completion of work by the USACE environmental sampling team. Specifically, this plan establishes health and safety requirements relevant to the conduct of field activities in accordance with 29 CFR Parts 1910 and 1926 and the USACE Health and Safety Program. The SSHP includes the identification of hazardous materials likely to be encountered at the site, their hazard potential, threshold, and other exposure limits; a hazard analysis of activities to be conducted; personal protective equipment requirements for each activity; monitoring equipment requirements; and decontamination requirements and procedures. In addition, Section 5.0 of the SSHP presents the Activity Hazard Analysis Plan for the anticipated and/or potential hazards associated with this project. Field activities associated with the project will be assessed, conducted, and documented in accordance with the current edition of the USACE Safety and Health Requirements Manual (EM 385-1-1).

This SSHP has been prepared for the use of site workers performing work approved for this project. It was prepared based on the best available information regarding the physical and chemical hazards known or suspected to be present on the project site. While it is not possible in advance to determine and protect against all possible hazards that may be encountered during the execution of this project, adherence to the requirements of this SSHP will significantly reduce the potential for occupational injury and illness at the project site. The guidelines contained in this plan were developed specifically for the project site and scope of work described herein, the plan should not be used at any other site without the review and approval of qualified health and safety professionals.

This SSHP is specifically designed for use by the project team personnel working at the site; subcontractor and other personnel obligated by contract or agreement to adopt a Health and Safety Plan at least as stringent as this SSHP with the written permission of the USACE

Project Manager, and with accompanying documentation signifying such use. Each company or agency performing work at the site is responsible for the health and safety of their own personnel. Each company is also responsible for providing employees with health and safety information (including training, medical monitoring, equipment, etc.) in compliance with relevant Occupational Safety and Health Administration (OSHA) regulations and contract agreements.

The evaluation of hazards, levels of protection, and procedures specified in this plan are based on the best information available and represent the minimum health and safety requirements to be observed by all personnel while engaged in this project. Unforeseeable site conditions or personal preferences may warrant the use of higher levels of protection. It is recognized that site conditions may change; therefore, it is imperative that the personal protective measures be thoroughly assessed and approved by the project Site Health and Safety Officer (SSHO) prior to and during the planned activities. Any additional health and safety procedures that are required by USACE that are more stringent than the procedures specified herein must be followed and shall supersede the requirements of this plan after approval by the SSHO. Employees must read this document carefully and indicate by signature that they have done so prior to beginning fieldwork at the site.

The main sections of this SSHP present information regarding the responsibilities of all site personnel, their required training, onsite monitoring for compliance with safety requirements, coordination and execution of field and installation safety activities, acquisition of safety permits, operations procedures, contingency procedures, and accident reporting requirements. Additional site requirements and site specific information are contained in appendices:

- Attachment 1 contains the Site Health and Safety Signature Form.
- Attachment 2 contains a copy of the USACE Accident Investigation Report (ENG Form 3394) and NWS Form 1, to be completed if an accident or injury occurs.
- Attachment 3 is the USACE Safety and Occupational Health Requirements for Hazardous, Toxic, and radioactive Waste (HTRW) Activities (EM 385-1-1).
- Attachment 4 provides the Project Training Requirements; these describe the health and safety training required of all project team members who work at a site.
- Attachment 5 contains the Site Specific Hazards and Controls amplifying summary information presented in the project Activity Hazard Analysis (Attachment 9).
- Attachment 6 is Heat/Cold Stress and First Aid
- Attachment 7 has Material Safety Data Sheets (as required, may be blank)
- Attachment 8 is SSSHP Amendments (as necessary)
- Attachment 9 is the Activity Hazard Analysis

Use of alcohol or non-medically prescribed drugs on the site or during performance of the contract is expressly prohibited. Violation of this prohibition will be grounds for immediate dismissal.

2. SAFETY AND HEALTH POLICY STATEMENT

The Seattle District USACE is committed to providing a safe and healthy working environment on each of its projects, and will strive to help mitigate and control recognized safety and health hazards at all of the working sites and projects. Health and safety is also an individual responsibility of each person assigned to a field project. Specific individuals outside the normal project management structure are tasked with additional health and safety oversight to provide additional safeguards for site personnel. It is the responsibility of workers who feel unsure of the project work plan, protocols, Activity Hazard Analyses, or other onsite safety measures and practices to specifically state to the Site Safety and Health Officer (SSHO) that they are uncomfortable with site conditions. This is so that instructions can be clarified or so that changes can be made in the field activities as appropriate. If the workers concerns are not satisfied, the project manager should be consulted. If the worker still has concerns, then the District Health and Safety Officer should be contacted. No worker(s) shall subject themselves to an unsafe environment or working condition.

3. HEALTH AND SAFETY ORGANIZATION

Health and safety is the individual responsibility of each person assigned to a field project. Specific individuals outside the normal project management structure are tasked with additional health and safety oversight to provide additional safeguards for site personnel. Figure 3-1 displays the lines of health and safety authority for the project. Attachment 3 contains the URL for the USACE *Safety and Health Requirements Manual* (EM 385-1-1).

It is the responsibility of workers who feel unsure of the project work plan, protocols, or onsite safety measures and practices to specifically state to the SSHO that they are uncomfortable with site conditions. This is so that instructions can be clarified or so that changes can be made in the field activities as appropriate. If the workers concerns are not satisfied, the project manager should be consulted. If the worker still has concerns, then the Corporate Health and Safety Officer should be contacted. No worker(s) shall subject themselves to an unsafe environment or working condition.

4. GENERAL AND EMERGENCY PROCEDURES

The following paragraphs give information on operational permits and emergency procedures that may be necessary in the event of an accident at the Site.

4.1. Acquisition of Authorization for Entry into Residences

The appropriate authorization and approval will be obtained from all owners/residences prior to entry and performance of any field operations. Request for entry will be conducted well in advance of the proposed field activities and authorization for entry will be documented prior to initiating field work.

4.2. General Field Procedures

Groundwater sample collection from private whole house filter sampling ports, private well taps, and designated monitoring wells shall only be performed in accordance with field sampling plans and Standard Operating Procedures approved by USACE and EPA, as described in the project work plans. Work will proceed with the minimum levels of protection specified in this SSHP. All work activities will be monitored with upgrades in level of protection as deemed necessary due to locally encountered conditions. Personnel are not authorized to conduct sampling activities alone.
Environmental field teams shall consist of a minimum of two personnel on each team.

All site personnel will have current 40 hour HAZWOPER training and at least one person will be current in First Aid and CPR. All site personnel will be expected to perform work in accordance with all approved and published plans. Any shipment of hazardous materials will comply with the Department of Transportation's hazardous materials regulations per 49 CFR Parts 171-179.

4.3. Emergency Response Procedures

Figure 1 shows the route to St. Luke's Hospital in the city of Jerome, Idaho in the event of medical emergency, or other mishap/accident, onsite and offsite emergency.

In the event of an emergency situation during the course of field activities at the Site, personnel in the immediate vicinity of the incident will immediately notify the SSHO. The SSHO will implement field emergency procedures to include driving the field team to the muster area at the Jerome County Airport if needed, and notifying the appropriate corporate and facility personnel. The SSHO will be responsible for documenting the response activities conducted in the event of an emergency and preparing the Accident Investigation Report.

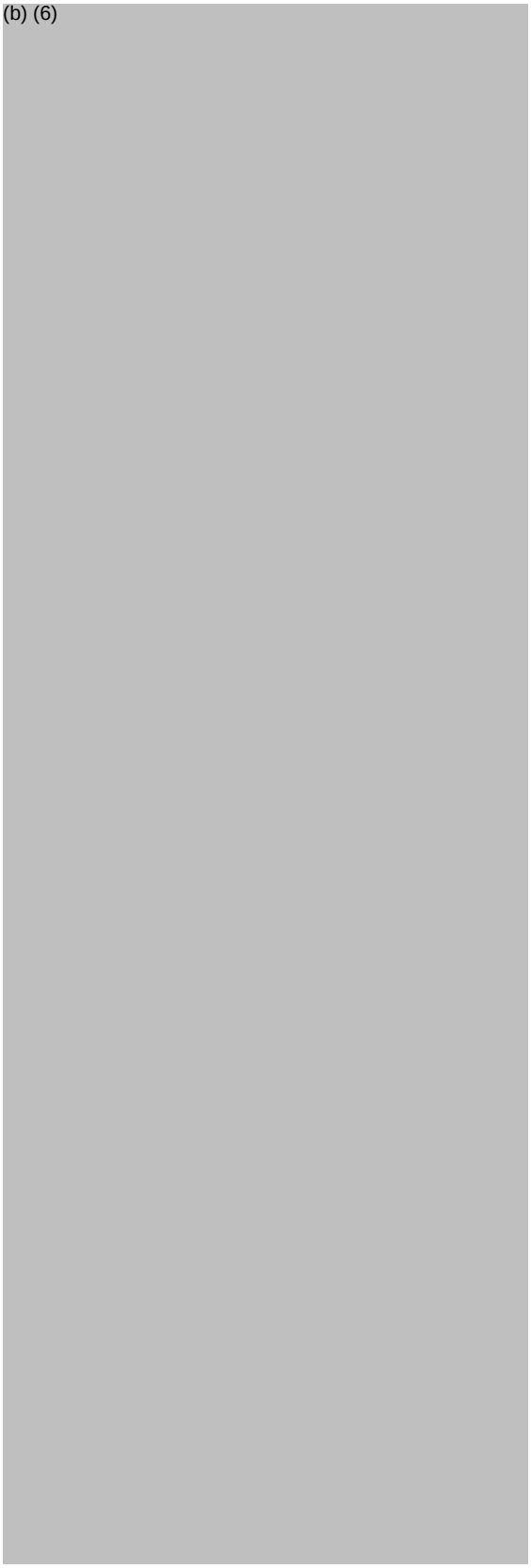

Figure 1. Hospital Route Map

Table 1. In Case of Emergency

Emergency Contacts:.....Fire/Rescue: 911
.....Ambulance: 911

Poison Control Center:.....(800) 452-7165

National Response Center Hotline:.....(800) 424-8802

Medical Facility:.....St. Lukes Hospital
.....709 N. Lincoln Ave.
.....Jerome, ID 83338

Directions to Offsite Hospital: From the Jerome County Airport Muster Area, drive south from the parking area, turn right and drive west on ID-25. In 3.2 miles, turn right onto N. Lincoln Avenue. In -0.4 miles, turn left into the Hospital Emergency entrance drive. Directions to the hospital are shown graphically in Figure 1-1, Hospital Route Map.

USACE Seattle District Chief of Safety
Tim Grube: Office: (206) 764-3503

4.3 Evacuation

In the event of an emergency situation, such as fire, explosion, significant release of gases etc., a vehicle horn will be sounded three times at five second intervals between blasts indicating the initiation of evacuation procedures. All personnel will evacuate and assemble at the vehicle or safe location. The SSHO will have authority to initiate proper action if outside services are required.

Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The SSHO must see that access for emergency equipment is provided and that all sources of combustion have been shut down once the alarm has been sounded. Once the safety of all personnel is established, the appropriate authorities will be notified by radio or telephone of the emergency. Evacuation plans will be discussed regularly with onsite personnel.

4.4. Potential or Actual Fire or Explosion

In the event of a potential or actual fire or explosion, the SSHO will immediately evacuate the field team from the site (vehicle horn will sound three times at five second intervals). The SSHO will notify the fire department at 911 and other appropriate emergency response groups. See Table 1 for the list of emergency phone numbers.

4.5. Environmental Incident (Release or Spread of Contamination)

In the event of an environmental release, the SSHO will take action to control or stop the spread of contamination, if possible. The SSHO should instruct a person on site to immediately contact the Fire Department (spill response) at 911 to inform them of the possible or immediate need for surrounding vicinity evacuation. The Site personnel will alert National or Regional Response Teams as necessary. Following these emergency calls, the reporting individual should then notify the project manager.

4.6. Personnel Injury

In the event of serious injury or mishaps involving a life-threatening situation, the SSHO will summon immediate emergency response aid from the facility by dialing 911. The site work teams do not normally have personnel trained in emergency response or rescue, and rescue should not be attempted if a danger exists to the would-be rescuers. Minor injuries and emergency treatment should be rendered, and some field team members have been trained in First Aid and CPR. General First Aid procedures to be implemented in the event of occupational injury are as follows:

- Chemical skin contact: wash affected area(s) and seek medical attention
- Chemical inhalation: remove victim to fresh air and seek medical attention
- Chemical ingestion: seek medical attention; do not induce vomiting
- If a person is physically injured, perform initial first aid procedures and seek medical attention (call 911 and/or evacuate victim to the Hospital - see Figure 3-1).

If there is a potential for an actual fire or explosion, evacuate the area, stay upwind, contact

local emergency responders, notify the SSHO, and notify the project manager.

4.7. Adverse Weather Conditions

Team members shall dress appropriately for weather conditions and take periodic breaks in warm/dry shelter when necessary.

In the event of rain, electrical storms, or other inclement weather, conditions will be assessed on site to determine if field operations can proceed safely. If it is determined that the weather poses a significant additional hazard, outdoor site operations will be stopped and rescheduled. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat/cold stress and heat-/cold-related injuries;
- Treacherous weather-related working conditions;
- Limited visibility;
- Potential for electrical storms; and
- Tornado watch or warning.

4.8. Lines of Authority for Emergency Situations

The Site Health and Safety Officer (SSHO) shall be Mr. Joseph Marsh. As the on-site administrator of the SSHP, he has primary responsibility for responding to and correcting emergency situations. If the SSHO is not available to perform these duties the Site Supervisor will fulfill these duties. These responsibilities include:

Take appropriate measures to protect personnel including: withdrawal from the exclusion zone, total evacuation and securing of the site, up- or down-grading the level of protective clothing and respiratory protection;

Take appropriate measures to protect the public and the environment including isolating and securing the site, preventing run-off to surface waters and ending or controlling the emergency to the extent possible;

Ensure that appropriate federal, state and local agencies are informed, and emergency response plans are coordinated. In the event of fire or explosion, the local fire department should be summoned immediately. In the event of an air release of toxic materials, the local authorities should be informed in order to assess the need for evacuation. In the event of a spill, sanitary districts and drinking water systems may need to be alerted;

Ensure that appropriate decontamination treatment or testing for exposed or injured personnel is obtained;

Determine the cause of the incident and make recommendations to prevent the recurrence;

Ensure that required reports have been prepared.

5. EMERGENCY RECOGNITION AND SITE EVACUATION

5.1. Medical Emergencies

First aid should be administered while awaiting an ambulance or paramedics. Injuries and illnesses must be promptly reported to the SSHO.

Personnel transporting an injured/exposed person to a clinic or hospital for treatment should take with them directions to the hospital and information on the chemical(s) they may have been exposed to. Vehicles used to transport contaminated personnel, will be cleaned or decontaminated as necessary.

5.2. Fire or Explosion

In the unlikely event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival the Site Health and Safety Officer or designated alternate will advise the fire commander of the location, nature and identification of the hazardous materials on- site.

If it is safe to do so, site personnel may:

Use firefighting equipment available on site;

Remove or isolate flammable or other hazardous materials that may contribute to the fire.

5.3. Spills, Leaks or Releases

Not applicable to this project.

5.4. Site Evacuation

If site evacuation is required, the muster area will be the Jerome County Airport. All outside work areas should have two designated exit points. Evacuation should be conducted immediately, without regard for equipment under conditions of extreme emergency.

Evacuation notification will be three blasts on vehicle horn, or by verbal communication via radio;

Keep upwind of smoke, vapors or spill location;
The SSHO will conduct a head count to insure all personnel have been evacuated safely;
In the event that emergency site evacuation is necessary, all personnel are to:
Escape the emergency situation;
Meet at the mustering area designated as the Jerome County Airport parking lot (located at 1050 E Main St, Jerome, ID 83338).

5.5. Monitoring and Action Levels

Not applicable to this project.

5.6. Heat/Cold Stress Monitoring

- Explain strategy or why not required:
- Monitoring Methods:
- Describe calibration procedures:

Name(s) of Monitoring Technician(s) [ ] Yes [ ] No

6. SITE SPECIFIC CONTROLS

6.1. General Field Safety Rules

- Whenever possible, avoid contact with potentially contaminated groundwater. Wear Nitrile gloves and eye protection.
- Eating, or drinking shall be permitted only in designated areas
- Personnel will only travel in vehicles where individual seats (for each occupant) are provided. Seat belts will be worn as required.
- Fire extinguishers will be available on-site and in areas with increased fire danger such fields with dry grass and sagebrush where wells are located.
- First aid kits shall be kept in the vehicle of each individual on site.

Buddy System

The buddy system is mandatory at any time that personnel are working in remote areas, on tanks, or when conditions present a risk to personnel such as entering extraction well pits. A buddy system requires at least two trained/experienced people who work as a team and maintain at a minimum audible and/or visual contact while working.

Each individual is required to carry a cell phone capable of dialing 911 on their person at all times.

7. ACCIDENT REPORTING

All accidents and injuries occurring at the Site will be reported to the proper authorities in accordance with USACE requirements and corporate policy. Accidents/ incidents resulting in a fatality, lost-time injury or illness of one or more days, hospitalization of three or more personnel, or property damage to Government or contractor property (which occurred during the performance of the contract) equal to or exceeding $2,000.00 must be reported telephonically to USACE (and OSHA in the case of injury/fatality) as soon as possible, but not later than 2 hours after occurrence and reported in writing within 5 days of occurrence on ENG Form 3394 (Attachment 2).

Reports will be made telephonically to the Seattle District Chief of Safety and Occupational Health (CSOH). In addition to the Accident Investigation Report, a NWS Form 1 (see Attachment 2) will be completed for all accidents involving site personnel. This form will be completed within 24 hours after the incident and submitted to the CHSO within 5 days of the incident.

The corporate reporting requirements will be met regardless of whether the incident appears to be serious. Likewise, any exposure will be reported even though there may be no adverse health effects or symptoms initially apparent. This is primarily because exposure to a toxic agent may often have delayed or latent effects which can only be detected by specific

diagnostic tests. Documenting an exposure may aid in identifying the cause of symptoms or changes in health status indicators (diagnostic blood tests or pulmonary function, for example at a later time).

The field-generated Accident Investigation Report will be reviewed and signed by the SSHO or the CSHO. In addition, the person in charge at the location during the incident will prepare a report on the actions taken during the incident and follow-up. The CSHO will determine the need for further follow-up actions. Reports of all exposure incidents will be reviewed by an examining medical physician within the medical monitoring program.

8. ONSITE MONITORING FOR COMPLIANCE WITH SAFETY REQUIREMENTS

The project health and safety personnel will monitor all onsite operations to ensure compliance with the SSHP prepared for the site. The SSHO will provide an initial safety briefing to familiarize site personnel with the overall site conditions and potential/actual hazards.

The SSHO or his designated alternate will be onsite during all work conducted at the site, and will be responsible for the safe day-to-day conduct of all tasks.

The Seattle District safety officer will conduct all site Health and Safety Audits.

8.1. Monitoring Instrumentation

Not applicable to this project.

8.2. Health and Safety Audits

Health and Safety Audits of the project will be conducted by the SSHO as deemed necessary and as provided for in EM 385-1-1 (see Attachment 3).

9. PERSONAL PROTECTIVE EQUIPMENT

All personnel performing work at the site that could potentially be exposed to a hazardous material or waste will be protected against these potential hazards. Personal Protective Equipment (PPE) and clothing have been specified to shield or isolate individuals from the chemical, physical, and biological hazards that could be encountered at the site. Adequate PPE will be selected and used to protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing. The PPE specified in this SSHP has been selected to strike a balance between potential hazards and field performance without compromising personnel safety. Use of PPE is required by OSHA regulations in 29 CFR Part 1910 and Health and Safety policies of USACE.

Minimum personal protective equipment requirements for this project shall be Worker Protection Level D.

9.1. Levels of Protection as Specified by OSHA for Chemical Hazard

Personal protective equipment shields the body against contact with a known or suspected chemical hazard. The following levels of protection for chemical hazards are required at the Site:

Level D: Level D protection should be worn only as a work uniform and not during an activity that presents a respiratory or skin hazard. It provides minimal protection and consists of:

- Coveralls or work shirt and work pants;
- Safety boots or shoes;
- Safety glasses or goggles;
- Hard hat (in construction areas or in crawl spaces);
- Nitrile Gloves (required when sampling or handling potentially contaminated material; and
- Work Gloves (optional); and
- Face shield (optional).

9.2. Task-Specific Levels of Protection

This section outlines the minimum levels of protective equipment specified for conduct of planned site activities, based on the expected site conditions and hazards that will be encountered routinely. Changes in site conditions, observation of unexpected hazards, or results of monitoring may dictate an upgrade in protection level, in which case appropriate changes to the minimum level will be documented by the SSHO.

Equipment specified below shall be used at all times that personnel are performing each noted activity, except the optional items which must be immediately available for use if needed.

9.3. Private Well Water Sampling

During tap-water sampling contact with groundwater is possible but unlikely:

A B C D X Modifications: Work clothes; Nitrile gloves; leather safety boots or rubber safety boots; hard hat.

10. SITE CONTROL AND DECONTAMINATION

The following sections discuss the control and spread of contamination, personnel access through the site, and decontamination procedures that will be followed while working at the site.

10.1. Contamination and Access Control

Not applicable to this project.

10.2. Personal Decontamination

Personnel shall be wearing Nitrile gloves during these field sampling activities and will change gloves between collection of each sample. Gloves used in these activities will be removed, placed into a plastic bag, and disposed of appropriately off site. Gloves will be removed and hands washed prior to consumption of fluids or food. Should inadvertent splash or spill occur,

complete decontamination prior to departing the work area will be required as follows:

- Remove, wash, and rinse hard hat (if soiled);
- Wash and rinse any soiled clothing and boots;
- Remove, wash, and rinse safety glasses/splash guard;
- Wash, rinse, and remove gloves; and
- Wash and rinse face and hands.

Proper sampling and handling procedures should eliminate the need for decontamination of personnel or equipment. However, if decontamination if required, wash and rinse solutions will be containerized and disposed of appropriately.

11. FATE OF INVESTIGATION-DERIVED MATERIALS

Not applicable to this project.

12. COMMUNICATIONS

Two sets of communication systems will be established: internal communications among personnel onsite, and external communications between onsite and offsite personnel.

12.1. Internal Communications

Internal communication is used to:

Alert team members to emergencies.
Communicate changes in the work to be accomplished.
Maintain site control.
Verbal communication at a site can be impeded by background noise, operating equipment noise, and the use of personal protective equipment. For effective communication, commands must be pre-arranged. In addition, audio or visual cues help convey the message. The most important thing is that signals are agreed to in advance.

The internal communication devices used at this site will be:

- Voice communication
- Cellular Telephones
- Visual Hand Signals

12.2. External Communications

An external communication system between onsite and offsite personnel is necessary to:

Coordinate emergency response.
Report to management.
Maintain contact with essential offsite personnel. The external communication devices used at this site will be:
Cellular telephones
All team members should know the location of the nearest telephone and emergency and project staff telephone numbers.

13. GENERAL SAFETY PROCEDURES

- All work shall be performed in compliance with 29 CFR 1910 (General Industry Standards), 29 CFR 1926 (Construction Industry Standards) and other applicable federal, state and local Health and Safety laws.
- The SSHO will ensure that the work site is illuminated to the minimum intensities specified by 29 CFR 1910.120(m) while work is being conducted.
- There will be no eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics in the work areas. Other activities which may facilitate the hand-to-mouth transfer of contaminants will also be avoided. Food articles or smoking materials will not be allowed in the work area.
- Where the potential for worker exposure to corrosive materials exists, suitable facilities for quick drenching or flushing of the eyes and body shall be provided at an

appropriate location on the work site for immediate emergency use. If eye washes are required, only those which meet the requirements of American National Standards Institute (ANSI) Standard Z358.1-1981 will be used except as authorized by the SSHO.

- A "buddy system," (i.e., a minimum of two workers who are close enough to render immediate aid in an emergency) will be maintained for all activities in an exclusion zone.
- Equipment will be in serviceable condition, properly maintained, and equipped with all necessary safety guards and operating accessories.
- A 20 lb. fire extinguisher will be present any time flammable liquids are present.
- An adequately stocked first aid kit will be in the work area vehicle at all times.
- Selection of personnel protective equipment shall be reviewed by the SSHO (as necessary), and shall be subject to the general provisions of 29 CFR Parts 1910 and 1926.
- Hearing protection shall be utilized when noise levels in the work area exceed 85 decibels, or when otherwise indicated by the SSHP.
- Good housekeeping practices shall be implemented on site. The Subcontractor shall maintain the work area in an orderly manner. Accumulation of trash or debris is prohibited. Tools, equipment, and materials used during work shall be properly stored after each workday.
- All site workers shall be fit for work, and qualified to perform all assigned tasks.
- All employees shall strictly comply with all safety regulations and restrictions of the SSHP.
- The SSHO shall maintain sufficient disposable PPE to accommodate government/regulatory site visitors/inspectors. Non-disposable PPE/equipment (hard hats, boots, respirators, etc.) shall be supplied by the individual.
- Each subcontractor shall provide all personnel protective clothing and equipment for its employees. Protective clothing and equipment shall be approved by, or comply with the specifications of: ANSI, Underwriters Laboratories, or Factory Mutual, as appropriate.
- Respiratory protection equipment shall be NIOSH/MSHA approved. Use of respiratory protection shall comply with 29 CFR 1910.134. All employees who use respiratory protection shall have been trained and medically certified for its use.All employees shall have been trained as required by the Hazard Communication Standard (29 CFR 1910.1200).
- All employees shall have site-specific orientation.
- All visitors shall have a safety briefing.
- All necessary steps shall be taken to protect employees from exposure to materials in excess of Permissible Exposure Limits.
- Safety glasses, hard hats and safety shoes are required in designated areas.
- Use or possession of alcohol, intoxicating drugs, or firearms on site is prohibited.
- The work teams shall properly use, store, and protect from ignition, flammable gases, liquids, fuels, and solvents.
- The work teams shall exercise customary and reasonable care to avoid contact with, or disruption of, surface, overhead, or underground utilities.
- Ground Fault Circuit Interrupter shall be incorporated into all temporary wiring and flexible cords.

- All procedures approved for use in each specific job are to be followed in addition to those noted in this SSHP.
- Adequate provisions shall be made for:
- Washing of hands and face prior to eating or drinking, or prior to consuming tobacco products.
- Providing drinking water to site personnel. During the summer months particularly, consumption of electrolyte replacement fluids such as Gatorade will be encouraged.

14. REFERENCES

EM 385-1-1, Attachment 3
National Fire Protection Association, Flammable and Combustible Liquids Code, NFPA 30 Title 49, CFR, Parts 171-177, Department of Transportation Hazardous Materials Regulations Title 29, CFR, Part 1910.120, Hazardous Waste Operations and Emergency Response
Title 29, CFR, Part 1926, Construction Industry Standards

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ATTACHMENT 1
SITE HEALTH AND SAFETY SIGNATURE FORM

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SITE HEALTH AND SAFETY SIGNATURE FORM

(Use separate form for each company/agency and for visitors)

COMPANY/AGENCY VISITORS

The site-specific and time-specific Site Health and Safety Signature Form provides: (1) a certification, as described below, by signature of each person on site; (2) a record of personnel, by employer, present during an operational period; and (3) a record of incidental visitors to the site. Additions may be made to the form as personnel arrive on site for an operational period, but changes in personnel and/or dates of work require a new Site Health and Safety Signature Form to be completed. Completed forms representing the current complement of site personnel must remain stapled to the front of the on-site copy of the Health and Safety Plan or be posted in prominent view at the field office trailer.

SITE NAME/NUMBER: Jerome Butte Targeted Brownfields Assessment

DATES OF WORK: To Be Determined

SITE PERSONNEL: Joseph Marsh, Jacob Williams

SITE SAFETY AND HEALTH OFFICER: Joseph Marsh

Prior to the initiation of field activities, I have been given an opportunity to read and question the contents of this Site Health and Safety Plan. By my signature, I certify that I have read, understood, and agree to comply with the information and requirements set forth in this Plan. I further certify that I am in full compliance with OSHA 29 CFR 1910.120 in regard to training and medical monitoring requirements.

Printed Name		Signature		Date

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ATTACHMENT 2 ACCIDENT INVESTIGATION REPORT and NWS Form 1

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(For Safety Staff only) | REPORT NO. | EROC CODE G0

UNITED STATES ARMY CORPS OF ENGINEERS
ACCIDENT INVESTIGATION REPORT
(For Use of this Form See Attached Instructions and USACE Suppl to AR 385-40)

REQUIREMENT CONTROL SYMBOL: CEEC-S-B(R2)

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING
GOVERNMENT ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ PUBLIC	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a. Name *(Last, First, MI)* | b. AGE | c. SEX ☐ MALE ☐ FEMALE | d. SOCIAL SECURITY NUMBER | e. GRADE

f. JOB SERIES/TITLE | g. DUTY STATUS ☐ ON DUTY ☐ TDY ☐ OFF DUTY | h. EMPLOYMENT STATUS AT TIME OF ACCIDENT ☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER *(Specify)*

3. GENERAL INFORMATION

a. DATE OF ACCIDENT *(month/day/year)* | b. TIME OF ACCIDENT *(Military time)* hrs | c. EXACT LOCATION OF ACCIDENT | d. CONTRACTOR's NAME (1) PRIME: (2) SUBCONTRACTOR:

e. CONTRACT NUMBER ☐ CIVIL WORKS ☐ MILITARY ☐ OTHER *(SPECIFY)* | f. TYPE OF CONTRACT ☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER *(SPECIFY)* | g. HAZARDOUS/TOXIC WASTE ACTIVITY ☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER *(Specify)*

4. CONSTRUCTION ACTIVITIES ONLY *(Fill in line and corresponding code number in box from list - see instructions)*

a. CONSTRUCTION ACTIVITY (CODE) # | b. TYPE OF CONSTRUCTION EQUIPMENT (CODE) #

5. INJURY/ILLNESS INFORMATION *(Include name on line and corresponding code number in box for items e, f & g - see instructions)*

a. SEVERITY OF ILLNESS / INJURY (CODE) # | B. ESTIMATED DAYS LOST | C. ESTIMATED DAYS HOSPITALIZED | D. ESTIMATED DAYS RESTRICTED DUTY

e. BODY PART AFFECTED PRIMARY (CODE) # SECONDARY (CODE) # | g. TYPE AND SOURCE OF INJURY/ILLNESS TYPE (CODE) # SOURCE (CODE) #

f. NATURE OF ILLNESS / INJURY (CODE) #

6. PUBLIC FATALITY *(Fill in line and correspondence code number in box - see instructions)*

a. ACTIVITY AT TIME OF ACCIDENT (CODE) # | b. PERSONAL FLOATATION DEVICE USED? ☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE ☐☐ PICKUP/VAN ☐☐ AUTOMOBILE ☐☐ TRUCK ☐☐ OTHER *(Specify)*

b. TYPE OF COLLISION ☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER *(Specify)*

c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
(1) FRONT SEAT			
(2) REAR SEAT			

8. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	B. OWNERSHIP	C. $ AMOUNT OF DAMAGE
(1)		
(2)		
(3)		

9. VESSEL/FLOATING PLANT ACCIDENT *(Fill in line and correspondence code number in box from list - see instructions)*

a. TYPE OF VESSEL/FLOATING PLANT (CODE) # | b. TYPE OF COLLISION/MISHAP (CODE) #

10. ACCIDENT DESCRIPTION *(Use additional paper, if necessary)*

See attached page.

ENG FORM 3394, SEP 89 | EDITION OF JUL 88 IS OBSOLETE. | Page 1 of 2 pages (Proponent: CEMP-S)

11. CAUSAL FACTOR(S) *(Read Instruction Before Completing)*

a. (Explain YES answers in item 13) YES NO

- DESIGN: Was design of facility, workplace or equipment a factor? ☐ ☐
- INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor? ☐ ☐
- PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor? ☐ ☐
- OPERATING PROCEDURES: Were operating procedures a factor? ☐ ☐
- JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred? ☐ ☐
- HUMAN FACTORS: Did any human factors such as size or strength of person, etc., contribute to accident? ☐ ☐
- ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident? ☐ ☐

a. (CONTINUED) YES NO

- CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident? ☐ ☐
- OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident? ☐ ☐
- SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task? ☐ ☐
- PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident? ☐ ☐
- DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident ☐ ☐

b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT?

☐ YES *(If yes, attach a copy.)* ☐ NO

12. TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?	b. TYPE OF TRAINING.	c. DATE OF MOST RECENT FORMAL TRAINING.
☐ YES ☐ NO	☐ CLASSROOM ☐ ON JOB	(Month) (Day) (Year)

13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES *(See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)*

a. DIRECT CAUSE

See attached page.

b. INDIRECT CAUSE(S)

See attached page.

14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).

DESCRIBE FULLY:

See attached page.

15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.

a. BEGINNING (Month/Day/Year)	b. ANTICIPATED COMPLETION (Month/Day/Year)		
c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT CORPS _____ CONTRACTOR _____	d. DATE *(Mo/Da/Yr)*	e. ORGANIZATION IDENTIFIER *(Div, Br, Sect)*	f. OFFICE SYMBOL

16. MANAGEMENT REVIEW *(1st).*

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

17. MANAGEMENT REVIEW *(2nd - Chief Operations, Construction, Engineering, etc.)*

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW

a. ☐ CONCUR b. ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS

SIGNATURE	TITLE	DATE

19. COMMAND APPROVAL

COMMENTS

COMMANDER SIGNATURE	DATE

(Reverse of ENG Form 3394)

Page 2 of 2 pages

*U.S. GOVERNMENT PRINTING OFFICE: 1993-0-791-757

10.	ACCIDENT DESCRIPTION (Continuation)

13a.	DIRECT CAUSE *(Continuation)*

(Addition to ENG Form 3394)

13b.	INDIRECT CAUSES *(Continuation)*

14.	ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) (Continuation)

(Addition to ENG Form 3394)

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ATTACHMENT 3

USACE SAFETY AND HEALTH REQUIREMENTS MANUAL (EM 385-1-1)
(WWW.USACE.ARMY.MIL/SAFETYANDOCCUPATIONALHEALTH.ASPX)

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ATTACHMENT 4
TRAINING REQUIREMENTS

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TRAINING REQUIREMENTS

All personnel participating in site work with the potential for incurring exposure to hazardous substances shall have successfully completed a pre-placement or periodic/update physical examination in accordance with 29 CFR 1910.120. All site personnel also shall have completed minimum training in compliance with 1910.120, as appropriate, or requirements as specified by other regulations, or this plan.

All site personnel will attend an initial safety briefing conducted by the SSHO to become familiar with the overall site conditions and hazards, and to review the contents of this SSHP relating to the safe conduct of work. Daily safety meetings will be attended to ensure safe work practices are used and personnel are familiar with any changes in the site conditions or field procedures.

The initial safety briefing will inform all site personnel of the location of the nearest telephone, the emergency phone numbers, and how emergency assistance can be summoned. If a pay telephone is used as a primary or secondary means of emergency communications, sufficient change shall be available in the command post. The list of emergency phone numbers will be conspicuously posted at the work site/work vehicle.

1. TRAINING

Subjects to Be Discussed With Employees in Safety Indoctrination

- Project Scope of Work
- Known Site Hazards and Required PPE
- Location of First Aid and Emergency Supplies On-site
- Location of MSDS
- Hospital Location and Route
- Emergency Signals and Assembly Areas
- Review and Acknowledgment of this Site Specific Health & Safety Plan

Applicable Mandatory Training and Medical Monitoring

Training	Standards/ Regulations	Applicable To	Periodic Retraining/ Recertification
HAZWOPER 40HR	29 CFR 1910.120	Field Staff	8 HR Refresher
HAZWOPER 8HR	29 CFR 1910.120	Field Staff	Annual

Emergency Response Training Requirements

Training	Standards/ Regulations	Applicable To	Periodic Retraining/ Recertification
First Aid	EM 385 1-1 03.A.	At Least One Staff	Yes
CPR	EM 385 1-1 03.A.	At Least One Staff	Yes

Daily Tool Box Safety Meetings

Before the start of work each day all employees, contractor, and subcontractor employees on-site will attend a Daily Tailgate Safety Meeting. Attendance to this meeting is mandatory and all attendees will sign the Daily Tool Box Safety Meeting form.

The Site Health and Safety Officer (SSHO) or designee will conduct the Tailgate Safety Meeting discussing appropriate areas of concern including the following topics:

- Review any safety incidents or concerns that arose from the previous day's work. Talk about lessons learned and ways to correct or prevent the reoccurrence of the safety incident.
- Review the work tasks scheduled for the day and any specific safety requirements.
- Review any testing results received (personal air monitoring, blood lead, etc).
- Review any changes or amendments to the current Site Specific Health & Safety Plan or AHAs.
- Discuss a specific health and safety topic related to the work to be performed (slip-trips-falls, heavy equipment, heat and cold stress, overhead and underground utilities, contaminants of concern, etc).

All attendees will be encouraged to participate, ask questions, and to voice any concerns they may have with the site's safety and to sign an attendance sheet.

2. SAFETY AND HEALTH INSPECTIONS

Daily Site Safety Inspection

On a daily basis, the SSHO will tour and inspect the entire project site and denote any safety deficiencies and will document his/her daily inspection in the Daily Quality Control Report and record any noted deficiencies, as follows:

- Date Deficiency Identified
- Description of Deficiency
- Person Responsible to Correct Deficiency
- Project Resolution Date
- Date Actually Resolved

If any employee discovers a safety deficiency, he/she will notify the Site Safety and Health Officer and/or Project Manager who will then take immediate action to correct the deficiency. The SSHO will conduct a follow-up inspection of the corrective action and document the inspection in the Daily Quality Control Report.

Periodic Safety Inspections

On a random basis the project is subject to an audit/assessment from the Project Manager, District Safety Manager, or a Safety Professional representing the District. This inspection will be unannounced with the results reviewed with the project staff and a copy of the inspection forwarded as necessary.

Any identified deficiencies will be noted and the SSHO will conduct a follow-up inspection of the corrective action and document the inspection, and will notify the client when the deficiencies are corrected.

External Inspections/Certifications that may be required
None.

3. ACCIDENT REPORTING

3.1. Accident Investigations, Reports, and Logs

In addition to the accident reporting requirements and forms specified below, in case of an accident or injury, USACE ENG form 3394, "U.S. Army Corps of Engineers Accident Investigation Report" must be completed and submitted to USACE. See section 21 of the USACE Safety and Health Requirements Manual for a copy of Form 3394. Also fill out NWS Form 1.

3.2 Fatal and Serious Incidents

If any incident results in a fatality or if one (1) or more employees lose consciousness and/or are hospitalized, the incidence shall be immediately be investigated by OSHA. **Immediate notification will be made by telephone to federal, state, and local agencies.** A detailed investigation report will be made within 48 hours, signed by the Project Manager and Corporate Safety Director, and delivered to the client within 48 hours after the incident has occurred, and any follow-up information as soon as possible thereafter.

The incident report shall include the name(s) of the victim(s), and of any known witnesses, date and time the incident occurred (as precisely as possible), exact location of incident, list of equipment and materials involved, and a detailed narrative of the events leading to the incident and a description of the incident itself.

Statements, written in full detail, shall be taken from those who witnessed the incident and those directly involved in the incident. Statements must be signed and dated by both the individual making the statement and a witness to his/her signature. The signed statement shall be attached to the incident report.

Photographs shall be taken of the incident scene and of all equipment or materials involved in the incident. Attention to detail in these photos is critical. Each photograph should have attached a description of the photo and the time the photo was taken as well as the name of the photographer. Photographs shall be incorporated into incident report.

A follow-up report shall be prepared immediately when new information or details become known about the incident after the initial report has been submitted. A follow-up

report shall also be necessary when there is a later discovery or a change of condition in equipment or material has occurred.

Any significant changes regarding the health status of any personnel injured during the incident shall be reported likewise.

Incident Reporting Policy

Accidents shall be promptly reported. Reporting procedure will vary, depending on the degree of seriousness of the incident. However, reporting must, in all cases, be prompt and in accordance with this section.

Serious (Recordable) Accidents
Serious (recordable0 accidents are defined as those that result in:

- Death
- Serious injury requiring hospitalization.
- Equipment damage in excess of $5,000.
- Property damage in excess of $5,000.

Any serious (recordable) accident that occurs on the project, or is related to the project through our employees and/or equipment, shall be reported to The Project Manager and the District Safety Officer.

Non-Serious Incidents

Non-serious incidents are those that result in the following:

- Injury treated by themselves, by a fellow employee, or by a physician where the employee is returned to work under full or limited duty status with no lost time.

- Injury resulting in lost time where the employee is **not** hospitalized, and the length of lost time does not exceed two working days.

- Equipment damage less than $5,000.

- Property damage less than $5,000.

- All non-serious incidents that occur on the project or are related to the project through our employees and/or equipment shall be reported to the District Safety Officer.

In all cases of injury, an incident report, outlining all the specific details of the accident, shall be filled out. The local/regional office of the Contractors Workers Compensation carrier, or the District Safety Officer as appropriate will be notified immediately by the SSHO.

It is important to note that lost time is only that time an employee is unable to report to work due to a job-related injury and the restricted work status imposed by a licensed physician.

4. PERSONAL PROTECTIVE EQUIPMENT (PPE)

The following is a brief description of the personal protective equipment which may be required during various field activities.

4.1 Level D Protection

Level D has been determined to be most appropriate for this project because:

- The atmosphere in all open-air work spaces has been demonstrated to be within OSHA permissible limits
- Work functions preclude splashes, immersion or the potential for unexpected inhalation of, or contact with, hazardous concentrations of harmful chemicals.

Level D Protection Equipment

Protective Gear - Level D	List Required Type by Chemical or Task and Change Out Frequency
Body Protection	Work clothing suitable for site conditions and weather. Knee pads and other protective items may be needed based on tasks.
Gloves	Nitrile gloves for sample collection and handling. Leather or Nitrile coated work gloves for non-sampling related work
Basic Safety Equipment	
Safety Shoes/Boots	Safety-toed Leather Work Boots are required at all times
Hard Hat	As required
Safety Glasses/ Face Shields	Safety glasses required at all times
Hearing Protection	As required by SSHO
Reflective Safety Vest	Required for all field personnel

4.2. Decisions to Upgrade/Downgrade PPE

Decisions to upgrade or downgrade PPE must be justified. The District Safety Officer must be advised of on-site decisions to downgrade. Decisions must be documented with an Addendum to the Plan. The following conditions will necessitate reevaluation of PPE use:

- Commencement of a new work not previously identified;
- Change of job tasks during a work phase;
- Change of season/weather;
- Contaminants other than those identified in SSHSP;
- Change in ambient levels of contaminants;
- Change in work which affects degree of chemical contact.

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ATTACHMENT 5
SITE SPECIFIC HAZARDS AND CONTROLS

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SITE-SPECIFIC HAZARDS AND CONTROLS

Activity Hazard Analysis

This section describes information on and analysis of known or potential hazards at the site.

A qualitative evaluation of the conditions at the site has been made to determine the known hazards at the site and evaluate the risks associated with site activities. This activity hazard analysis is based on:

- The nature and location of site activities being conducted;
- The nature of known contaminants;
- The potential presence of contaminants at specific work areas;
- The potential for personnel and public exposure during various site activities;
- The effects of contaminants on human health; and
- The concentrations of contaminants.

The potential physical, biological, and chemical hazards of concern for this project are discussed in the following sections. Activity Hazard Analysis forms for each work task are provided in the tables following the discussions of each of the potential hazards of concern.

Anticipated Physical Hazards of Concern

- Physical Hazards:
- Slips, trips, and falls
- Falling objects
- Buried objects
- Holes/ditches/animal burrows
- Moving machinery
- Heavy equipment
- Vehicular traffic
- Low light conditions
- Electrical Hazards:

- Below ground utilities
- Household electrical systems
- Overhead power lines
- Electrical equipment
- Thermal Stress:
- -Cold exposure
- Heat exposure

Safety hazards may be a function of the terrain or of the work itself. Site personnel should constantly look out for potential safety hazards and should immediately inform their supervisors of any new hazards so that mitigated action can be taken.

Hot temperatures and inclement weather may present hazards for travel to, from, and around the site as well as for site work. Attachment 6 contains information on heat and cold stress hazards.

All members of the study team will observe and comply with all state and local motor vehicle laws and regulations.

Anticipated Biological Hazards of Concern

- Poisonous plants
- Insects
- Snakes and other reptiles
- Rodents
- Domestic animals

Biological hazards are difficult to eliminate entirely. Protective clothing such as snake chaps, gloves, and insect nets can help reduce chances of exposure, but the Site Health and Safety Officer (SSHO) should always be aware that personnel may suffer severe allergic reactions to poison ivy, bee stings, and other irritants or venom. Personnel with severe allergic reactions should inform both field supervisors and safety personnel of their medical sensitivities so potential exposures can be minimized, if possible.

Anticipated Chemical Hazards of Concern

- Chemical hazards:
  - Concentrated hydrochloric and nitric acids for sample preservation.

No other significant health and safety concerns at this time.

The hazard associated with contaminant exposure varies directly with the concentration of contamination to which an individual is exposed and the length of exposure. Exposure potential is defined as the probability of an individual receiving a harmful exposure.

Contaminants in groundwater are not confirmed at this site.

Precautions will be taken to avoid splash, inhalation, and skin contact hazards from contaminated media and reagent chemicals, including donning of appropriate personal protective equipment (PPE).

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ATTACHMENT 6 HEAT/COLD STRESS AND FIRST AID

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FIRST AID AND EMERGENCY CARE

Most accidents occurring at a job site will require minimal first aid available through use of the first aid kit(s) at the work site or in the support facility. For more serious medical emergencies that may or may not require professional medical attention, the American National Red Cross (1988) has developed first-aid procedures that can be followed until professional medical attention is obtained. The following sections present a summary of these procedures.

HEAT EMERGENCIES

There are three forms of heat emergencies: heat stroke, heat exhaustion, and heat cramps. Of these three, heat stroke is the most serious because it is life-threatening.

Heat Stroke

Symptoms

- Hot, red skin
- Very small pupils
- Very high body temperature
- Skin may feel dry

First Aid

- Call for medical assistance.
- Move the victim to a cool (not cold) place immediately.
- Cool the victim quickly by immersing him/her in a cool (not cold) bath, wrapping wet sheets around the victim and fanning him/her, or spraying the victim with cool water.
- Monitor the victim for shock (page E-3) until medical assistance arrives.

Heat Exhaustion

Symptoms

- Cool, pale, and moist skin
- Heavy sweating
- Dilated pupils
- Headache
- Nausea
- Dizziness
- Vomiting
- Normal body temperature

First Aid

- Move the victim out of the heat.
- Have the victim lie down with feet elevated.
- Loosen or remove the victim's clothes.
- Cover the victim with wet towels or sheets or apply cold packs wrapped in cloth.
- Fan the victim.
- Have the victim drink one-half glass of water every 15 minutes if they are conscious and able to keep the fluid down.

Heat Cramps

Symptoms

- Muscular pains and spasms

First Aid

- Move the victim out of the heat.
- Have the victim drink one-half glass of water every 15 minutes for one hour.

COLD EMERGENCIES

Severe cold exposure can be an immediate danger to life and health. The two most serious forms of cold exposure are hypothermia and frostbite.

Hypothermia

Symptoms

- Shivering
- Dizziness
- Numbness
- Confusion
- Weakness
- Impaired judgment
- Impaired vision
- Drowsiness

Stages

- Shivering
- Apathy
- Loss of consciousness
- Decreasing pulse rate and breathing rate
- Death

First Aid

- Call for medical assistance.
- Move the victim to a warm place.
- Remove the victim's wet clothing, as applicable.
- Cover the victim with a dry blanket.
- Warm the victim slowly.
- Monitor the victim's breathing and heart rate.
- Give the victim warm broth or water - no alcohol or caffeine. Frostbite

Symptoms

- Area is very cold to the touch and numb
- Slightly flushed skin
- Mild frostbite will appear on the edges of appendages as white or grayish-yellow with hardened skin

- Moderate frostbite will show a larger portion of the appendages as white or grayish-yellow and skin will have blistered
- Severe frostbite is grayish-blue and skin will be hard, cold, and numb. There is a danger of gangrene developing from severe frostbite

First Aid

- Move the victim to a warm place.
- Place the frostbitten areas in warm (not hot) water.
- Handle the frostbitten areas gently.
- Do not rub, massage, or apply unnecessary pressure to the frostbitten area.
- Place dry gauze between frostbitten toes or fingers.
- Bandage frostbitten areas loosely. ANIMAL BITES

Infection from an animal bite can develop quickly: first aid should be administered immediately.

First Aid

- Control the bleeding.
- Gently wash the wound unless bleeding heavily.
- Cover the bite with a bandage.
- Have the victim see a trained medical person. RABID ANIMAL BITES

Rabies can be found in the saliva of skunks, bats, raccoons, cattle, cats, dogs, foxes, squirrels, prairie dogs, rats, and mice.

First Aid

- Observe the animal for unusual behavior.
- Get the victim to medical care.
- Give a description of the animal and where it was last seen to the police and/or animal control so they can capture the animal for determination of rabies infection.
- Do NOT attempt to capture or restrain the animal yourself. INSECT BITES AND STINGS

Insert bites and stings may be tolerated by some individuals more so than others. A past history of bite and sting tolerance is not indicative of continued tolerance. All bite and sting victims should be monitored for allergic reactions. The following is a summary of symptoms and first-aid response for an allergic reaction to a bite or sting.

Symptoms

- Pain
- Swelling of the bite or sting area, which may be accompanied by swelling of the throat
- Redness or discoloration of the bite or sting area
- Itching
- Hives
- Decreased awareness
- Breathing noisy or difficult

First Aid

- Remove the stinger with tweezers or scrape with a rigid item without squeezing it (which may release more venom).
- Wash the area of the bite or sting.
- Place a cold pack wrapped in cloth on the area.
- Keep the bite or sting below heart level.
- Get the victim to medical assistance if an allergic reaction is observed. SNAKE BITES

Few people actually die from snake bites; however, quick response to a snake bite is imperative.

First Aid

- Call for medical assistance.
- Immobilize the bitten area.
- Keep the bitten area below the heart level.
- Keep the victim calm and still.
- Observe victim for symptoms of shock (page E-3).
- Give a description of the snake to the medical responder.
- Do not cut above the bite and aspirate the poison.
- Do not use a tourniquet. SEVERE BLEEDING

First Aid

Stop external bleeding by:

- Applying direct pressure to the wound using a clean cloth.
- Apply cloths on top of the first one if bleeding persists; do not remove original cloth.
- If there is no fracture, raise the wound above the level of the heart.

- Apply pressure at the appropriate pressure point (squeezing the main artery against the bone in the forearm or against the pelvis in the groin) while continuing pressure on and elevation of the wound.
- Wrap the wound using subtle pressure to tighten the wrap.
- Check for a pulse on the injured limb to determine that the wrap is not too tight.
- Call for medical assistance. INTERNAL BLEEDING

Internal bleeding may be as innocuous as a bruise to a condition that threatens life and health.

Symptoms

- Tender, bruised, swollen or rigid abdomen
- Fractured ribs or pelvis
- Vomiting small to large amounts of blood
- Injuries that have penetrated the body cavity
- Rectal or vaginal bleeding
- Difficulty breathing
- Pulse rate is abnormal
- Cool, moist skin
- Pallor

First Aid

- Treat small bruises by applying a cold pack to the injury.
- Obtain medical help immediately if more severe internal bleeding is suspected.
- Observe the victim's breathing and monitor his/her pulse.
- Keep the victim calm and still.
- Loosen the victim's clothing.
- Place the victim on his/her side if vomiting.
- Monitor the victim for symptoms of shock (below). SHOCK

Shock can be caused by internal and external bleeding, insect bites or stings, snake bites, electrical shocks, severe injuries or burns, as well as other medical conditions. First aid and medical assistance is imperative for shock victims because shock is caused by a lack of sufficient blood supply to such vital organs as the heart, the lungs, and the brain.

Symptoms

- Confused behavior
- Either very slow or very fast pulse rate

- Either fast, shallow breathing or very slow breathing
- Weak and trembling limbs
- Cool, moist skin
- Pallor or bluish skin
- Pupils are dilated

First Aid

- Improve victim's circulation by lying them down with feet elevated if there are no leg fractures or suspected neck/head injuries. (Lay the victim flat if injuries are suspected.)
- If no injuries are suspected, a semi reclining position may be used to alleviate breathing problems.
- If the victim is vomiting turn him/her onto their side.
- Keep the victim warm.
- Call for medical assistance.
- Monitor the victim's heart rate and breathing. VICTIM NOT BREATHING

First Aid

- Tap or gently shake the victim to see if there is a response. Ask, "Are you okay?"
- Roll the victim onto his/her back and toward you.
- Tilt the head back while lifting the chin.
- Check for breathing for 3 to 5 seconds.
- Pinch the nose shut, seal your mouth over the victim's mouth and give two 1- to 1-1/2-second breaths while keeping the head tilted back.
- Check for a pulse.
- Call or send someone for help.
- Continue rescue breathing, if necessary, by breathing into the victim's mouth for 1 to 1-1/2 seconds every 5 seconds.
- Observe victim for a pulse approximately every minute. VICTIM NOT BREATHING AND HAS NO PULSE

First Aid

- Roll the victim onto his/her back and toward you.
- Tilt the head back while lifting the chin.
- Check for breathing for 3 to 5 seconds.
- Pinch the nose shut, seal your mouth over the victim's mouth and give two 1- to 1-1/2-second breaths while keeping the head tilted back.
- Check for a pulse.

- Call or send someone for help.
- Locate the notch at the lower end of the breastbone.
- Place the heel of your hand two fingers-width up from the end of the notch.
- Place your other hand on top keeping the fingers of your hands off the chest.
- Position your shoulders directly over your hands.
- Using a steady, firm force, bending at the waist, compress the breastbone 1-1/2 to 2 inches for 15 counts in 10 seconds.
- Perform rescue breathing (2 quick breaths as above).
- Repeat this for a total of 4 cycles.
- Recheck pulse.
- Continue cardiopulmonary resuscitation (CPR) procedures as described above until medical assistance arrives.

BURNS

There are four types of burns: heat burns, chemical burns, electrical burns, and radiation burns. Each type has three categories of burns: first degree, second degree, and third degree.

First Degree Burn Symptoms

- Least severe
- Skin will be red or discolored
- Mild swelling
- Pain

Second Degree Burn Symptoms

- Burn extends deeper into the skin
- Skin is red or mottled
- Blistering
- May appear wet from skin fluid loss
- Painful

Third Degree Burn Symptoms

- Deepest burn; extends through all skin layers
- Skin appears white or charred
- Can look like second-degree burns
- Pain may be severe or, if nerve endings are destroyed, may not occur at all
- Can occur in patches with less severe burns

First Aid for Heat Burns

- Flush with cool running water if there are no blisters or charring. Apply moist dressings and bandage loosely.
- If blisters or charring are present, apply a dry dressing and bandage loosely. Do not use water.
- Call for medical assistance.

First Aid for Chemical Burns

- Flush the chemicals from the skin with lots of water.
- Continue flushing for 15 to 30 minutes.
- Remove any contaminated clothing or jewelry.
- Cover burns loosely with a dry bandage or dressing.
- Call for medical assistance.

First Aid for Electrical Burns

- Avoid contact with electrical source.
- Shut down the electrical source.
- Cover all burns with a loose dry dressing and bandage.
- Provide care for shock (page E-3) as needed.
- Call for medical assistance.

First Aid for Radiation Burns

- None.
- Decontaminate the victim.
- Obtain medical assistance immediately. EYE INJURIES

Eye injuries should always be treated as a serious injury.

Symptoms

- Visible foreign object
- Redness
- Burning
- Pain
- Headache
- Tearing

First Aid

- Use care and be gentle when touching the eyes.
- Wash hands before caring for an eye injury, if possible.
- If an object is in the eye, lift the upper eyelid, have the victim look down and flush the eye with clean water or eye wash solution.
- If there are chemicals in the eye, flush the eye with clean water or eye wash solution from the nose outward for 15 to 30 minutes.
- For objects in the eye (whether removed through flushing or not) and for chemicals in the eye, wrap a bandage loosely around both eyes.
- If the eye is cut or there is a penetrating object in the eye, place a cup over the injured eye and wrap both eyes loosely with a bandage. Do not attempt to remove the penetrating object.
- Obtain medical assistance for all (even minor) eye injuries. NOSE INJURIES

Nose injuries can be indicative of more serious injuries to the head, back, or neck. Caution should be used to assess this type of injury. Nosebleeds are typically a less serious injury but can be severe enough to cause shock from loss of blood. Be sure to ask the victim how the nosebleed began.

First Aid

- Have the victim sit down.
- Have him/her lean forward with the chin resting on the chest.
- Pinch the nose.
- Keep the victim calm and quiet until the bleeding has stopped.

Symptoms of a More Serious Nose Injury

- Swelling and pain
- Pupils dilated unevenly
- Bloody or clear fluid draining from either the ears or the nose
- Loss of feeling and movement in appendages

First Aid for a More Serious Nose Injury

- Do not attempt to stop the flow of fluid from the nose.
- Keep the victim's head and neck stable.
- Keep the victim calm and quiet.
- Call for medical assistance.

FRACTURES

There are two types of fractures: simple (one internal fracture) and compound (two or more fractures often breaking the skin). The compound fracture is more serious because of the accompanying open wound. Fractures occurring in the body may be indicative of internal injuries.

Symptoms

- A grating sensation and/or a snapping sound when the appendage is moved
- Deformities
- Pain and tenderness
- Bruising and swelling
- Immobility of the injured part

Note: First aid for fractures, dislocation, sprains, and strains are similar for these injuries. The first aid for these injuries will be discussed after the symptoms.

DISLOCATIONS

Symptoms

- Deformity
- Swelling and tenderness
- Pain in the joint
- Loss of or limited movement SPRAINS OR STRAINS

Sprains are the result of stretched or torn tendons or ligaments around the joints. Torn muscles are indicative of strains.

Symptoms

- Pain in the joint
- Sharp pain
- Tender to the touch
- Bruising and swelling
- Stiffness

First Aid for Fractures, Dislocations, Sprains, or Strains

- If the injury is to the head, neck, or back, stabilize the head and neck. Do not attempt to move the victim unless absolutely necessary. Obtain medical assistance immediately. Keep the victim calm and quiet.

- Determination of the precise injury is often difficult, so remember this rule of thumb: "When in doubt, splint".
- Splint only if it can be done without causing more pain and discomfort to the victim.
- The injury must be splinted in the position in which it is found. Do not attempt to straighten the injured part.
- Splint the injured area as well as the surrounding joints so that the entire limb is immobilized.
- Check for a pulse before and after splinting.
- Call for medical assistance.

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ATTACHMENT 7
MATERIAL SAFETY DATA SHEETS as Required

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ATTACHMENT 8
SITE SPECIFIC SAFETY AND HEALTH PLAN AMENDMENTS

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Site Specific Safety and Health Plan Amendments

SITE SHSP AMENDMENT # SITE NAME: DATE:	
TYPE OF AMENDMENT: REASON FOR AMENDMENT:	
ALTERNATE SAFEGUARD PROCEDURES: REQUIRED CHANGES IN PPE:	

Project Manager (Date)

District Health and Safety Officer (Date)

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ATTACHMENT 9 ACTIVITY HAZARD ANALYSIS

GROUNDWATER SAMPLING FROM PRIVATE WELL SYSTEMS

Jerome Butte Targeted Brownfields Assessment, Jerome, Idaho
Activity Hazard Analysis (AHA)

GOVERNING HEALTH AND SAFETY PLAN		
Site: Jerome Butte	***Author:*** US Army Corps of Engineers, Seattle District	**Title:** Jerome Butte Targeted Brownfields Assessment Private Wells Groundwater Sampling Site Safety and Health Plan (SSHP) October 2016
ACTIVITY HAZARD ANALYSIS		
Field Dates: **Spring 2017.**	Branch: Technical Services, Seattle District, USACE Location: Jerome, Idaho vicinity	Supervisors: TBD, Geology and Instrumentation Section Marlowe Laubach, Environmental Engineering and Technology Section Safety Officer: Tim Grube (206)764-3503

Task: Groundwater sampling from wellhead vicinity taps,.	*Title of Person(s) Who Performs Job:* HAZWOPR trained Technical Professionals with a minimum 24 hours field experience.	Reviewed By: Joseph Marsh
Recommended Personal Protective Equipment (PPE) and/or Pertinent Job Safety Form(s), Work wear suitable for local weather conditions. Safety glasses, steel-toed leather or rubber boots, reflective safety vests, appropriate work gloves, chemical resistant Nitrile gloves, hearing protection devices as needed. **Important Notes:** 1. Employees shall not be permitted to participate in field activities until they have been trained to a level required by the activity. 2. Minimum two persons are required for each activity. Personnel are not authorized to work alone on this project.		
Groundwater Sampling Activities	Lifting-related injuries from handling filled sample coolers and supply boxes.	• Avoid manual lifting of heavy objects. Use mechanical advantage systems if available. Get assistance if object weighs more than 50 lbs. but do not attempt if two people cannot accomplish the lift. • Use proper lifting technique; center the load, and lift with the legs, not the back. • Wear steel toed boots and work gloves during lifting activities.

	Obstacles, fences, debris, electrical,	• Open gates – do not climb fences. • Watch for uneven terrain, metal, wood, ceramic and other debris. • Do not open electrical panels or touch wires.

Groundwater Sampling Activities in well houses. **Note:** Well houses or well vaults are not currently classified as permit spaces but these control measures are suggested for added safety margin in a remote location.	Limited egress Physical and biological hazards	• Before entry secure door in open position for several minutes and verify that active ventilation is working. • Before entry inspect space from outside with flashlight • Vaults can present attractive area for snakes, rodents, and spiders. Be aware of and follow control measures for biological and physical hazards outlined elsewhere in this AHA. • Ensure good communication with base is in place for worker outside of vault and that outside worker will never enter vault in case of emergency but will contact help.

General	Fire and Emergency	• At least two fully charged working cell phones will be available on site. 911 will be dialed in case of fire or medical emergency. The site safety officer will have directions to the site and to Good Shepherd Hospital in Hermiston posted along with contact information. First aid equipment will be stocked and available on site and at least one person with first aid training will be on site at all times. Work will be conducted only during daylight hours. The Corps Seattle Safety Office (206) 764-3503, will be contacted immediately in case of any serious or loss time injury. Team members may fight only incipient stage fires. Care should be taken to ensure vehicles are not operated on vegetated areas, and all fuel or alcohol spills are cleaned up immediately. Gasoline will be handled with care and kept away from heat or ignition sources. All flammable substances will be transferred with appropriate grounding and bonding of containers.

Biological Hazards	Potential biological hazards may include snakes, rodents, spiders, ticks, fleas, flying insects, hantavirus, and West Nile Virus	• PPE: Long pants, light colored clothing, ankle high safety boots, should be worn. • Before reaching into dark places use a flashlight and a stick to clear the space of spider webs or to identify if any pests are located within. • Do not attempt to perform pest control tasks. Stop work and notify the Project Manager then secure a professional pest control service. • Apply insect repellant. • Observe area for snakes, do not step or put hands into areas blindly. Proceed slowly in brushy areas and stomp on ground. • Do daily self-inspection for ticks. • Do not enter areas that have dead birds, rodents, or excessive feces.
Weather	Heat Stress	• Have tailgate meeting to ensure all personnel understand methods of monitoring and first aid procedures for heat stress. • Keep hydrated and monitor others on team for visual indications of heat stress such as red skin, disorientation, profuse sweating or pallid dry skin in case of heat stroke. • Use sunscreen on exposed skin. • Team leader shall ensure team members wear appropriate PPE for hot weather and establish cooling breaks in air conditioned vehicles or installation office as needed.

	High Winds	• Wear safety glasses or goggles as needed. • Be aware of wind-blown debris; keep a clean work area to prevent wind-blown debris. • In high winds suspend operations that place personnel or equipment at risk until winds have lessened in speed.
	Lightning	• If lightning is observed during operations, cease immediately and seek shelter. Work to resume thirty (30) minutes after last observed lightning bolt/strike. • Personnel to be aware of changing weather conditions.
	Severe Storms	• Personnel to be aware of changing weather conditions. • Cease field activities in the event of severe storms. • Work that has been suspended will resume once approval to restart has been obtained from the Team Leader.
	Cold Stress/Hypothermia	• In the event of forecasted cold weather or wind chill warnings, conduct a tailgate meeting to ensure all personnel understand methods of monitoring and first aid procedures for cold stress/Hypothermia. • Team leader shall ensure team members wear appropriate PPE for cold weather and establish warming breaks in heated vehicles or installation office as needed.

Other Physical Hazards	Slips, Trips, and Falls	• Maintain clean work area. Keep unnecessary equipment and supplies stowed in vehicle or building and not around worksite. • Maintain safety steel toe boots and safety glasses in good condition. • Be aware of the presence/potential of debris on or protruding up from ground surface (sharp edges, rebar, concrete, etc.).
	Noise	• Implement the three (3) foot rule, if shouting is required to be heard within three (3) feet of other personnel hearing protection is required. Not expected on this project. • Impulsive or impact noise must not exceed 140 db peak sound level. Not expected on this project. • Use engineering controls where applicable.

Check each day for appropriate equipment and batteries including full eyewash, charged cell phones, charged fire extinguishers, PPE, trash bags and receptacles, emergency contact lists, SDS, fresh drinking and washing water on site, fuel, and working hand washing and sanitation facilities near the job site.	Training: 1. Current HAZWOPER Training for all site workers. 2. At least one person on team must have current First Aid/CPR training. 3. Daily Tailgate Safety Meetings. 4. Site specific training. 5. Training in use of equipment required for job. 6. Recommend at least one person on team be HTRW Site Supervisor trained.	Inspections: 1. Daily vehicle operability inspection. 2. Continuous observation of site for identified hazards. 3. Sampling equipment must be inspected by the field team prior to being used – any items that could result in a safety hazard must be repaired or replaced prior to starting work (e.g., hydraulic hoses, frayed cords, loose bolts, unguarded drive trains). Equipment must be inspected according to the manufacturer's guidelines prior to use.

Appendix B

Jerome Butte Targeted Brownfields Assessment Support
Jerome, Idaho
Private Well Water Sampling
Standard Operating Procedures

Prepared: December 2016

Prior to sample collection:

1. Verify selected property owners have signed the EPA right of entry forms; verify each sample property matches the name(s) of the resident or water supply owner/operator, and the resident's exact address. The verification is required to avoid sampling the wrong wells, and to inform residents or water supply owner/operators of the results of the sampling event. Use the Google Earth-based maps marked up with designated sampling locations to accurately identify each sample point if possible.

2. If possible, record the State well ID tag number (attached to well casing) in the field logbook.

3. In addition, GPS coordinates shall be collected at all sample points to support project mapping efforts.

4. Leave a written message (door tag) for occupants that are not home during the sampling event stating that USACE has completed the water sampling on their property.

1.0 Private Wells

Insufficient private well construction data exists to apply the same sampling procedures used for groundwater monitoring wells, i.e., low-flow sampling. The volume to be purged in these situations, therefore, depends on several factors: whether the pumps are running continuously or intermittently and whether or not any storage/pressure tanks are located between the sampling point and the pump. In order to better document private well construction, to the extent practicable, notes should be collected for each system including: presence of a water storage tank and approximate size (in gallons); pipe sizing (in inches); distance to well (in feet); whether there is an access port on the well for ground water level collection; sample collection point; and any other applicable notes that may be useful on system configuration to help complete a private well database. The second sampling event would only need to verify the sample points and any obvious changes to the well systems or conditions.

2.0 Purging

The environmental field team shall attempt to purge water from each sampling point at a standardized flow rate of one gallon per minute. While water from each private well system is being purged, the sampling team will monitor for unusual observations and odors as the flowing water is collected in a five gallon bucket.

Private well water purging consists of allowing water from a designated sample point to flow at the standardized flow rate while measuring the water temperature at regular intervals. The environmental field team shall monitor the temperature of the water removed during purging using a digital thermometer. A temperature reading will be recorded in the project field book every two minutes for a minimum of six minutes. During purging, the metallic temperature probe will be fully submerged into the water stream and held steady at each sample point. In addition, the team members shall shield the thermometer from the sun or any other heat source while measurements are recorded. While one team member holds the thermometer steady, the other will maintain time control and record temperatures at the designated one minute intervals. Stabilization occurs when, for at least three consecutive measurements, the temperature fluctuates by no more than plus or minus 0.2 degrees Celsius. If the temperature has not stabilized during the first three readings, the sampling team will continue purging while recording the water temperature every minute until stabilization has been verified. Stabilization will usually occur within 4-5 minutes. If after 15 minutes stabilization has not been reached, purging shall end and water sampling may begin.

Once stabilization has been verified, water sampling for laboratory analysis may begin. The team shall collect samples for volatiles analysis first by adjusting the flow rate to no greater than 200 to 400 milliliters/minute. The remaining analytes will be collected next, with flow rate being adjusted to no greater than one liter per minute.

3.0 Sample Collection

Prior to sample collection, the sampler shall don a new, clean pair of Nitrile gloves. Potable water supply samples will typically be collected from a tap or hose bib located at or near the well head or pump house and before the water supply is introduced into any storage tanks or treatment units. Efforts should be made to reduce the flow rate during sample collection to minimize sample aeration, and produce a smooth flow (approximately 300 to 500 milliliters per minute recommended).

During sample collection, make sure that the hose bib (or sample tubing) does not contact the sample containers.

Experience has shown that the piston-type riser hose bibs found in the yards of some properties cannot maintain a low flow discharge rate. To correct this, the sampling team has found that if one team member holds the valve control handle at the appropriate angle, a low flow rate can be achieved for the other team member to collect bubble and turbulence-free samples.

In cases where a smooth flow cannot be achieved, the sampling team may affix a decontaminated length of Teflon® tubing with brass coupling directly to the tap – holding the tubing up in an “S” shape to induce a smooth, turbulence-free sample. The Teflon® tubing and brass coupling shall be decontaminated with an Alconox/distilled water solution and triple rinsing with distilled water before reuse at a different sampling port. If Teflon® tubing is required for a given sample point, the sampling team shall take a digital photo and note the use of Teflon® tubing in the field

logbook. In addition, collection of an equipment blank sample from this decontaminated tubing may be required at the direction of the project chemist (see Section 5.0).

The samples should be collected with as little agitation or disturbance as possible. Samples designated for volatile analysis will be filled using the following methods: Hold the open vial at an approximate 45 degree angle with the opening pointed toward the sample stream. Allow the sample stream to flow down the inner sidewall of the vial. The vial should be filled so that there is a meniscus at the top of the vial and absolutely no bubbles or headspace should be present in the vial after it is capped. After the cap is securely tightened, the vial shall be inverted and tapped briskly approximately 10 times on the palm of one hand to see if any undetected bubbles are dislodged. If a bubble or bubbles are present, the vial should be topped off using a minimal amount of sample to re-establish the meniscus. Care should be taken not to flush any preservative out of the vial during topping off. The sample containers for all other analytes shall be filled to the neck of each container, leaving approximately one inch of headspace.

After sample collection, the sampling team shall label each vial noting sampling date and time as recorded in the field book. The sample containers shall then be sealed into plastic bags, or bubble wrap bags, and placed into pre-iced sample shipping coolers for delivery to the analytical laboratory.

4.0 Groundwater Stabilization Verification and Criteria

As noted previously, temperature is the only water chemistry indicator parameter to be monitored. As a guideline for stabilization, temperature should have stabilized for three successive readings. The three successive readings shall be within: +/- 0.2 ˚C for temperature.

5.0 Decontamination

If used, all non-dedicated sample collection tubing and brass connections used to collect water samples must be decontaminated prior to deployment to the field by flushing the tubing (inside and out) with a phosphate-free Alconox/distilled water solution. Next, the tubing and parts will be triple- rinsed with distilled water, allowed to air dry, then be placed into a clean Ziploc® bag for transportation. Once deployed to the field and used for sampling, the same protocol applies: flushing the tubing and parts (inside and out) with a phosphate-free Alconox/distilled water solution; and triple-rinsing with distilled water, then placement into a clean Ziploc® bag for transportation.

The decontamination water must be distilled water brought onto the site and cannot come from wells.

State of Idaho Drinking Water Certificate

Organic Analysis

Effective Dates: 10/1/16-9/30/17

Anatek Laboratory
1282 Alturas Drive
Moscow, Id 83843
EPA ID: ID00013

	List of Analytes	Status [1]	Methods
Volatiles			
	Dibromochloropropane (DBCP)	C	504.1
	Ethylene Dibromide (EDB)	C	504.1
	Total Trihalomethanes (TTHM's)	C	524.3
	VOC's (Except Vinyl Chloride)	C	524.3
	Vinyl Chloride	C	524.3
Pesticides			
	Alachlor	C	525.2
	Atrazine	C	525.2
	Chlordane	C	505
	Endrin	C	505
	Gamma – BHC (Lindane)	C	505
	Heptachlor	C	505
	Heptachlor Epoxide	C	505
	Hexachlorobenzene	C	525.2
	Hexachlorocyclopentadiene	C	525.2
	Methoxychlor	C	505
	Simazine	C	525.2
	Toxaphene	C	505
Herbicides			
	2,4-D	C	515.4
	2,4,5-TP (Silvex)	C	515.4
	Dalapon	C	515.4
	Dinoseb	C	515.4
	Pentachlorophenol	C	515.4
	Picloram	C	515.4
	Carbofuran	C	531.2
	Oxamyl (Vydate)	C	531.2
	Glyphosate	C	547
Miscellaneous			
	Adipates	C	525.2
	Phthalates	C	525.2
	Polynuclear Aromatic Hydrocarbons	C	525.2
	Polychlorinated Biphenyl's (PCB's)	C	505 (Screen)
	Diquat	C	549.2
	Endothall	C	548.1
	Haloacetic Acids (HAA5)	C	6251B

1: C = Certified, N = Not Certified, P = Provisionally Certified, * = Certification Not Requested

Christopher Ball, Ph.D., HCLD (ABB)
Certification Authority for the State of Idaho

IDAHO DEPARTMENT OF HEALTH & WELFARE

State of Idaho Certificate for the Microbiological Analysis

of

Drinking Water

Magic Valley Lab., Inc.

210 Addison Avenue
Twin Falls, ID 83301
EPA ID00911

Based on the most recent assessment, proficiency testing results and continuing compliance with the EPA (815-R-05-004) "Manual for the Certification of Laboratories Analyzing Drinking Water" with addendums and IDAPA 16.02.13, Magic Valley Lab., is certified for environmental monitoring under the Safe Drinking Water Act and authorized to perform the following methods for the analytes listed.

SM9223B	Total coliform/*E. coli* Enzyme Substrate (Colilert® P/A)
	Total coliform/*E. coli* Enzyme Substrate (Colisure® P/A)

This certification is in effect through December 31st 2017.

Christopher Ball, Ph.D., HCLD (ABB)
Certification Authority for the State of Idaho

IDAHO DEPARTMENT OF HEALTH & WELFARE
DIVISION OF PUBLIC HEALTH

Idaho Bureau of Laboratories- 2220 Old Penitentiary Rd-Boise Id 83712-8299
www.statelab.idaho.gov 208-334-2235 ext 0

APPENDIX D– Analytes and Reporting Limits

TABLE 1 – SOC Method Sensitivity and Method Quality Control Limits							
Parameter – Method	**LOD (µg/L)**	**LOQ/RL (µg/L)**	**Regulatory Benchmark Values**	**Method Blank Contamination**	**LCS % Recovery**	**MS/MSD %Recovery; RPD**	**Surrogate Control Limits (CLs)**
			Idaho GW MCL (µg/L)				
SOCs – EPA: 504, 505, 525, 515/548, 531, 547, and 549							
2,4 –D	.102	.1	70	Use default lab parameters	Use default lab parameters	Use default lab parameters	Use default lab parameters
2,4-DB	.05	1					
EDB	0.0103	.02	0.05				
Endothall	2.2	9					
Dalapon	.054	1	200				
DBCP	0.0053	0.04					
Dicamba	0.064	0.2					
Dinoseb	0.052	0.2	7				
Diquat	0.3	0.4					
Glyphosate	3.2	5					
Pentachlorophenol	0.012	0.04	1				
Picloram	0.057	0.1	200				
Silvex	.03	.2	50				
Aldicarb	0.333	2	3				
Aldicarb sulfone	0.226	0.7	3				
Aldicarb sulfoxide	0.354	1.8	4				
Carbofuran	0.47	2	40				
Oxamyl	0.26	2	50				
Methomyl	0.143	1					
3-hydroxycarbofuran	0.304	2					
Carbaryl	0.185	2					
Alachlor	0.0162	0.2	2				
Atrazine	0.041	0.1	3				

TABLE 1 – SOC Method Sensitivity and Method Quality Control Limits							
Parameter – Method	**LOD (µg/L)**	**LOQ/RL (µg/L)**	**Regulatory Benchmark Values**	**Method Blank Contamination**	**LCS % Recovery**	**MS/MSD %Recovery; RPD**	**Surrogate Control Limits (CLs)**
			Idaho GW MCL (µg/L)				
Benzo[a]pyrene	0.0034	0.02	0.2				
Butachlor	0.0661	0.4					
Di(2-ethylexyl)phthalate	0.49	0.6	6				
Di(2-ethylhexyl)adipate	0.0311	0.2	400				
Hexachlorobenzene	0.0221	0.1	700				
Hexachlorocyclopentadiene	0.0197	0.1	1				
Metolachlor	0.0197	0.1					
Propachlor	0.0356	0.2					
Simazine	0.0567	0.07	500				
Metribuzin	0.038	0.2					
Chlordane	0.0288	0.1	2				
Endrin	0.002	0.01	2				
Heptachlor	0.0026	0.04	0.4				
Heptachlor epoxide	0.008	0.02	0.2				
Lindane	0.0011	0.02	0.2				
Methoxychlor	0.0047	0.1	40				
PCBs (total)	0.095	0.1	0.5				
Toxaphene	0.12	1	3				
Aldrin	0.0118	0.2					
Dieldrin	0.0032	0.2					

TABLE 2 – Radionuclides Method Sensitivity and Quality Control Limits - ANATEK LAB (Moscow, ID)							
Parameter – Method	**LOD**	**LOQ/RL**	**Idaho GW MCL (µg/L)**	**Method Blank Contamination**	**LCS% Recovery; RPD**	**MS/MSD %Recovery; RPD**	**Surrogate CL**
Radionuclides – EPA 900.0							
Gross Alpha/Beta Activity	1 pCi/L	1 pCi/L	15 pCi/L	Use default lab parameters	Use default lab parameters	Use default lab parameters	Use default lab parameters

TABLE 3 – Metals - Method Sensitivity and Quality Control Limits – MANCHESTER ENVIRONMENTAL LAB							
Parameter – Method	**LOD (µg/L)**	**LOQ/RL (µg/L)**	**Idaho GW MCL (µg/L)**	**Method Blank Contamination**	**LCS% Recovery; RPD**	**MS/MSD %Recovery; RPD**	**Surrogate CL**
Metals – EPA 200.8 (or similar)							
Antimony	0.062	1	6	Use default lab parameters	Use default lab parameters	Use default lab parameters	Use default lab parameters
Arsenic	0.046	0.63	10				
Barium	0.028	2.5	2000				
Beryllium	0.036	0.05	4				
Cadmium	0.022	0.13	5				
Chromium	0.14	1.3	100				
Copper[1]	0.032	1.3					
Lead[1]	0.0076	0.13					
Mercury	0.016	0.05	2				
Selenium	0.028	1.3	50				
Thallium	0.0074	0.63	2				
Uranium[1]	0.006	0.04					

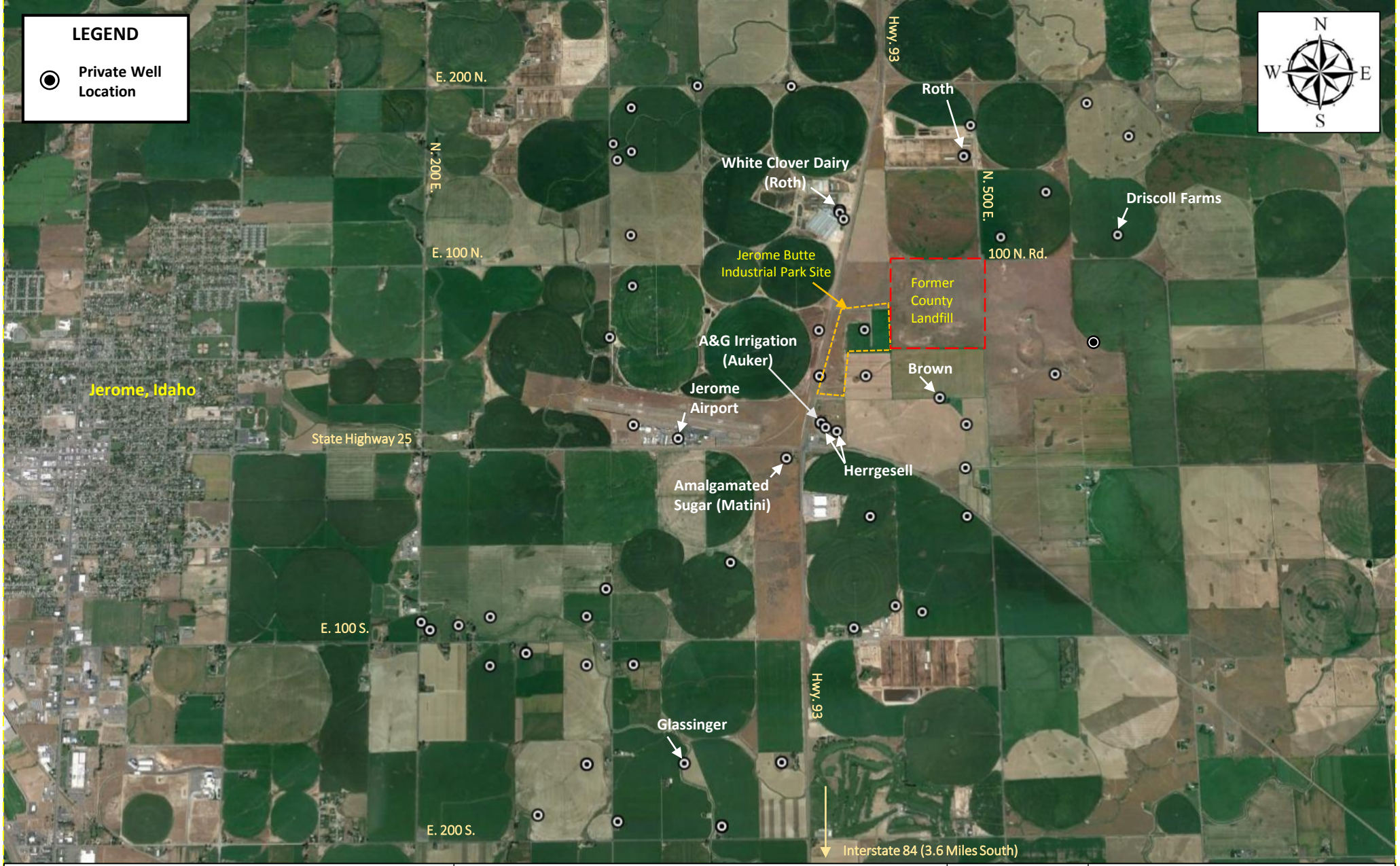
1-The EPA (federal) drinking water MCLs for copper and lead are cited in 40 CFR 141 Subpart I as copper (1.3 mg/L) and lead (0.015 mg/L), based on 90th percentile calculations of monitoring results. For uranium, the federal MCL is 30 µg/L. Blanks indicate no state MCL.

TABLE 4 – Nitrates - Method Sensitivity and Quality Control Limits- MANCHESTER ENVIRONMENTAL LAB							
Parameter – Method	**LOD (µg/L)**	**LOQ/RL (µg/L)**	**Idaho GW MCL (µg/L)**	**Method Blank Contamination**	**LCS % Recovery; RPD**	**MS/MSD %Recovery; RPD**	**Surrogate CL**
Nitrates – EPA 353.2							
Nitrate + Nitrite	0.048	500	10000	Use default lab parameters	Use default lab parameters	Use default lab parameters	Use default lab parameters

TABLE 5 – VOCs - Method Sensitivity and Quality Control Limits – CONTRACT LABORATORY PROGRAM LAB – TO BE DETERMINED							
Parameter – Method	**LOD (µg/L)***	**LOQ/RL (µg/L)**	**Idaho GW MCL (µg/L)**	**Method Blank Contamination**	**LCS % Recovery; RPD**	**MS/MSD %Recovery; RPD**	**Surrogate CL***
VOCs – EPA SW-846 8260C and 524.2							
Vinyl chloride	Use default lab parameters	0.5	2	Use default lab parameters	Use default lab parameters	Use default lab parameters	Use default lab parameters
Benzene		0.5	5				
Carbon tetrachloride		0.5	5				
1,2-dichloroethane		0.5	5				
Trichloroethylene		0.5	5				
p-dichlorobenzene		0.5	75				
1,1-dichloroethylene		0.5	7				
1,1,1-trichloroethane		0.5	200				
Cis-1,2-dichloroethylene		0.5	70				
1,2-dichloropropane		0.5	5				
Ethylbenzene		0.5	70				
Monochlorobenzene		0.5	100				
o-dichlorobenzene		0.5	600				
Styrene		0.5	100				
Tetrachloroethylene		0.5	5				
Toluene		0.5	1000				
Trans-1,2-dichlorotheylene		0.5	100				
Xylenes (total)		0.5	10000				
Dichloromethane		0.5	5				
1,2,4-trichlorobenzene		0.5	70				
1,1,2-trichloroethane		0.5	5				

*Need LODs once CLP lab determined.

TABLE 6. Bacteria - Method Sensitivity and Quality Control Limits – MAGIC VALLEY LAB (Twin Falls, ID)							
Parameter – Method	**LOD**	**LOQ/RL**	**Idaho GW MCL (µg/L)**	**Method Blank Contamination**	**LCS % Recovery; RPD**	**MS/MSD %Recovery; RPD**	**Surrogate CL**
Bacteria – SW-9223B-PA Colilert							
Total Bacteria	Presence/Absence			Use default lab parameters	Use default lab parameters	Use default lab parameters	Use default lab parameters



0 2,500 5,000

Approximate Scale in Feet

JEROME BUTTE INDUSTRIAL PARK
Jerome, Idaho

WELLS WITH SIGNED ACCESS AGREEMENTS FOR WATER SAMPLE COLLECTION

Prepared by: CENWS-EN-TS

Date: 10/11/16

US Army Corps of Engineers ®
Seattle District